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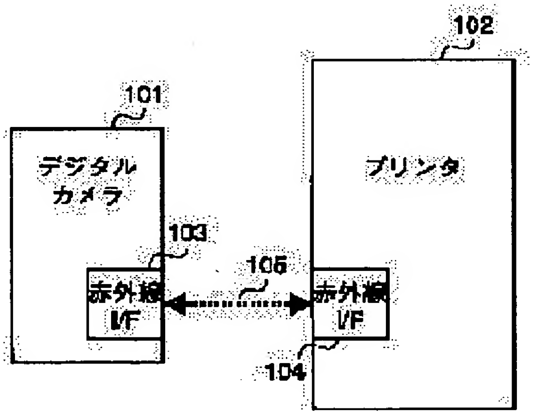
(54) IMAGE PRINTING SYSTEM, IMAGE PICKUP DEVICE AND PRINTING DEVICE

(57)Abstract:

PROBLEM TO BE SOLVED: To provide an image printing system which can print/output an image that is picked up by an image pickup device by a printing device without troubling an operation.

SOLUTION: In the image printing system, communication is executed by transferring an infrared ray 105 between a digital camera 101 and a printer 102 through respective infrared ray I/F 103 and 104. At the time of printing and outputting the image which is picked up by the digital camera 101, printing data conversion software and image data are transmitted by the infrared ray 105 from the infrared ray I/F 103 from the digital camera 101. Printing data conversion software and picture data, which are transmitted by the infrared ray 105, are received through the infrared ray I/F 104 of the printer 102. Received printing data conversion software is started on the printer 102 and received picture data are converted into printing data by printing data conversion software.



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CLAIMS

[Claim(s)]
[Claim 1] In an image print system equipped with the image pick-up equipment which picturizes an image and generates the image data of this image, and the airline printer which prints the image corresponding to these print data to a print sheet based on the print data in which printing processing is possible The means of communications for communicating between said airline printers to said image pick-up equipment is prepared. A data-conversion means to change the means of communications for communicating between said image pick-up equipment to said airline printer and the image data of said image pick-up equipment into the print data in which said printing processing is possible is established. Said image pick-up equipment transmits said image data through the means of communications, and said airline printer receives directly the image data transmitted from said image pick-up equipment through the means of communications. The image print system characterized by starting said data-conversion means and changing said image data which received into the print data in which said printing processing is possible.
[Claim 2] In an image print system equipped with the image pick-up equipment which picturizes an image and generates the image data of this image, and the airline printer which prints the image corresponding to these print data to a print sheet based on the print data in which printing processing is possible The means of communications for communicating between said airline printers, while carrying the data-conversion means for changing into the print data [said image pick-up equipment] which can printing process [said] said image data in ready-for-sending ability is prepared. The means of communications for communicating between said image pick-up equipment to said airline printer is prepared. Said image pick-up equipment transmits said image data and said data-conversion means through the means of communications. Said airline printer receives directly said image data transmitted from said image pick-up equipment through the means of communications, and said data-conversion means. The image print system characterized by starting said received data-conversion means and changing said image data which received into the print data in which said printing processing is possible.
[Claim 3] In an image print system equipped with the image pick-up equipment which picturizes an image and generates the image data of this image, and the airline printer which prints the image corresponding to these print data to a print sheet based on the print data in which printing processing is possible The means of communications for communicating to said image pick-up equipment between the data-conversion means for changing said image data into the print data in which said printing processing is possible, and said airline printer is prepared. The means of communications for communicating between said image pick-up equipment to said airline printer is prepared. Said image pick-up equipment changes said image data into the print data in which said printing processing is possible with said data-conversion means. The print data in which this printing processing is possible are transmitted through the means of communications of this image pick-up equipment. Said airline printer is an image print system characterized by receiving directly the image data which was transmitted from said image pick-up equipment through the means of communications, and in which said printing processing is possible, and printing based on the this received print data in which printing processing is possible.
[Claim 4] The image pick-up equipment which picturizes an image and generates the image data of this image, and the airline printer which prints the image corresponding to these print data to a

print sheet based on the print data in which printing processing is possible, In an image print system equipped with the information processor which carries a data-conversion means to change said image data into the print data in which said printing processing is possible in ready-for-sending ability The means of communications for communicating between said airline printers to said image pick-up equipment is prepared. The means of communications for communicating between said image pick-up equipment and said information processors to said airline printer is prepared. The means of communications for communicating between said airline printers to said information processor is prepared. Said information processor transmits said data-conversion means through the means of communications. Pre-image pick-up equipment transmits said image data through the means of communications, and said airline printer receives directly said data-conversion means transmitted from said image data transmitted from said image pick-up equipment through the means of communications, and said information processor. The image print system characterized by starting said received data-conversion means and changing said image data which received into the print data in which said printing processing is possible.

[Claim 5] In an image print system equipped with the image pick-up equipment which picturizes an image and generates the image data of this image, and the airline printer which prints the image corresponding to these print data to a print sheet based on the print data in which printing processing is possible The means of communications for communicating between the data-conversion means for changing an additional information generation means to generate the additional information corresponding to said image data to said image pick-up equipment, and said image data into the print data in which said printing processing is possible, and said airline printer is prepared. The means of communications for communicating between said image pick-up equipment to said airline printer is prepared. Said image pick-up equipment changes said image data into the print data in which said printing processing is possible with said data-conversion means. Said additional information is transmitted through the means of communications of this image pick-up equipment with the print data in which this printing processing is possible. Said airline printer receives directly the image data which was transmitted from said image pick-up equipment through the means of communications and in which said printing processing is possible, and said additional information. The image print system characterized by printing said received additional information to the outside field of the printing field of said image in said print sheet while printing the image corresponding to these print data to a print sheet based on the print data in which the received this printing processing is possible.

[Claim 6] In an image print system equipped with the image pick-up equipment which picturizes an image and generates the image data of this image, and the airline printer which prints the image corresponding to these print data to a print sheet based on the print data in which printing processing is possible The means of communications for communicating between the data-conversion means for changing an additional information generation means to generate the additional information corresponding to said image data to said image pick-up equipment, and said image data into the print data in which said printing processing is possible, and said airline printer is prepared. The means of communications for communicating between said image pick-up equipment to said airline printer is prepared. Said image pick-up equipment changes said image data into the print data in which said printing processing is possible with said data-conversion means. Said additional information is transmitted through the means of communications of this image pick-up equipment with the print data in which this printing processing is possible. Said airline printer receives directly the print data which were transmitted from said image pick-up equipment through the means of communications and in which said printing processing is possible, and said additional information. While printing the image corresponding to these print data to a print sheet based on the print data in which the received this printing processing is possible When said received additional information is printed to the outside field of the printing field of said image in said print sheet and only the print data in which said printing processing is possible are received While printing the image corresponding to these print data to a print sheet based on the print data in which the received this printing processing is possible The image print system characterized by generating the additional information corresponding to the received this print data, and printing this additional information to the outside field of the printing field of said image in said print sheet.

[Claim 7] The means of communications of said image pick-up equipment and the means of communications of said airline printer are claim 1 characterized by consisting of a radio means thru/or the image print system of any one publication of six.

[Claim 8] Said radio means is an image print system according to claim 7 characterized by consisting of infrared means of communications.

[Claim 9] Said infrared means of communications is an image print system according to claim 8 characterized by consisting of means of communications which used the IrDA method.

[Claim 10] Said infrared means of communications is an image print system according to claim 8 characterized by consisting of means of communications which used the ASK method.

[Claim 11] The means of communications of said image pick-up equipment and the means of communications of said airline printer are claim 1 characterized by consisting of a serial wire communication means thru/or the image print system of any one publication of six.

[Claim 12] Said serial wire communication means is an image print system according to claim 11 characterized by consisting of means of communications which used the Universal-Serial-Bus method.

[Claim 13] Said serial wire communication means is an image print system according to claim 11 characterized by consisting of means of communications based on the specification of IEEE1394.

[Claim 14] Said data-conversion means is an image print system according to claim 1, 2, or 4 characterized by things from the program described in the language which can interpret said airline printer.

[Claim 15] Said image pick-up equipment is claim 1 characterized by consisting of a digital still camera thru/or the image print system of any one publication of six.

[Claim 16] They are claim 1 which establishes the selection means for choosing a printing condition display means display the printing conditions over said image data on said image pick-up equipment, and said displayed printing conditions, and is characterized by for said data-conversion means to perform conversion to said print data of said image data so that it may correspond to said selected printing conditions thru/or the image print system of any one publication of six.

[Claim 17] Said printing condition display means is an image print system according to claim 16 characterized by serving as a means to display the image which said image pick-up equipment picturized.

[Claim 18] Said selection means is an image print system according to claim 16 characterized by serving as the means for choosing the photography mode in said image pick-up equipment.

[Claim 19] Said airline printer is claim 1 characterized by consisting of an ink jet printer thru/or the image print system of any one publication of six.

[Claim 20] Said information processor is an image print system according to claim 4 characterized by consisting of a personal computer.

[Claim 21] Said additional information is an image print system according to claim 5 characterized by consisting of information containing the date data which picturized said image.

[Claim 22] Said additional information is an image print system according to claim 5 characterized by consisting of information containing the name of said image pick-up equipment.

[Claim 23] Said additional information is an image print system according to claim 5 characterized by being transmitted to said airline printer from said image pick-up equipment by the character code.

[Claim 24] The image pick-up equipment characterized by to have an image pick-up means picturizes an image and generate the image data of this image in the image pick-up equipment for having two incomes with the airline printer which carries a data-conversion means change the 1st means of communications and image data into the print data in which printing processing is possible, and constituting an image print system, and the means of communications of said airline printer and the 2nd means of communications which can communicate directly, and to carry out the direct communication of said image data to said airline printer through said 2nd means of communications.

[Claim 25] In the airline printer for having two incomes with the image pick-up equipment which carries the 1st means of communications, picturizes an image, and generates the image data of this image, and constituting an image print system The 1st means of communications of said image pick-up equipment, and the 2nd means of communications in which direct communication is possible, It has a data-conversion means to change the image data of said image pick-up equipment into the print data in which said printing processing is possible. The airline printer characterized by receiving directly the image data transmitted through said 1st means of communications from said image pick-up equipment through said 2nd means of communications, starting said data-conversion means, and changing said image data which received into the print data in which said printing processing is possible.

[Claim 26] In the image pick-up equipment for having two incomes with the airline printer which carries the 1st means of communications, and constituting an image print system While carrying a data-conversion means for said airline printer to change said image data into the print data in which printing processing is possible in ready-for-sending ability, the 1st means of communications of said airline printer and the 2nd means of communications in which direct communication is possible are prepared. Image pick-up equipment characterized by transmitting said image data and said data-conversion means to said airline printer through said 2nd means of communications.

[Claim 27] In the airline printer for having two incomes with the image pick-up equipment which carries the data-conversion means for changing into the 1st means of communications and the print data which can printing process the picturized image data of an image, and constituting an image print system The 1st means of communications of said image pick-up equipment and the 2nd means of communications in which direct communication is possible are prepared. Said image data transmitted through said 1st means of communications from said image pick-up equipment and said data-conversion means are directly received through said 2nd means of communications. The airline printer characterized by starting the received this data-conversion means and changing said image data which received into the print data in which said printing processing is possible.

[Claim 28] In the image pick-up equipment for having two incomes with the airline printer which carries the 1st means of communications, and constituting an image print system While carrying a data-conversion means for said airline printer to change the image data of the picturized image into the print data in which printing processing is possible, the 1st means of communications of said airline printer and the 2nd means of communications in which direct communication is possible are prepared. Image pick-up equipment characterized by changing said image data into said print data with said data-conversion means, and transmitting these print data to said airline printer through said 2nd means of communications.

[Claim 29] In the airline printer for having two incomes with the image pick-up equipment which carries the data-conversion means for changing into the 1st means of communications and the print data which can printing process the picturized image data of an image, and constituting an image print system The airline printer characterized by receiving directly said print data which prepared the 1st means of communications of said image pick-up equipment, and the 2nd means of communications in which direct communication is possible, and were transmitted through said 1st means of communications from said image pick-up equipment through said 2nd means of communications.

[Claim 30] The image pick-up equipment which carries the 1st means of communications, In the airline printer for having two incomes with the information processor which carries the data-conversion means in which the transmission for changing the image data of the image which the 2nd means of communications and said image pick-up equipment picturized into the print data in which printing processing is possible is possible, and constituting an image print system The 1st means of communications of said image pick-up equipment, and the 2nd means of communications of said information processor and the 3rd means of communications in which direct communication is possible are prepared. Said data-conversion means transmitted through said 2nd means of communications is directly received through said 3rd means of communications from said image data transmitted through said 1st means of communications from said image pick-up equipment, and said information processor. The airline printer characterized by starting said received data-conversion means and changing said image data which received into the print data in which said printing processing is possible.

[Claim 31] In the airline printer for having two incomes with the image pick-up equipment which prepared the data-conversion means and the 1st means of communications for changing an additional information generation means to generate the additional information corresponding to the image data of the picturized image, and said image data into the print data in which said printing processing is possible, and building an image print system The 1st means of communications of said image pick-up equipment and the 2nd means of communications in which direct communication is possible are prepared. Said additional information transmitted with said print data through said 1st means of communications from said image pick-up equipment is directly received through said 2nd means of communications. The airline printer characterized by printing said received additional information to the outside field of the printing field of said image in said print sheet while printing the image corresponding to these print data to a print sheet based on the received this print data.

[Claim 32] The airline printer according to claim 31 characterized by generating the additional information corresponding to the this received print data, and printing this additional information to the outside field of the printing field of said image in said print sheet while printing the image corresponding to these print data to a print sheet based on the this received print data, when only said print data are received.

[Translation done.]

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DETAILED DESCRIPTION

[Detailed Description of the Invention]
[0001]
[Field of the Invention] This invention relates to the suitable image pick-up equipment and the suitable airline printer for an image print system and this image print system for carrying out the printout of the image picturized with image pick-up equipment with an airline printer.
[0002]
[Description of the Prior Art] A personal computer (henceforth PC) is used for the image print system for generally carrying out the printout of the image picturized with the digital camera by the printer, image data is incorporated from image pick-up equipment, a printer changes this image data into the print data in which printing processing is possible, and PC outputs it to a printer.
[0003] It explains concretely, referring to drawing 21 about this image print system. Drawing 21 is drawing showing the conventional example of the image print structure of a system.
[0004] As an image print system is shown in drawing 21 , it consists of a digital camera 1001, PC1002, and a printer 1003, and a digital camera 1001 and PC1002 are connected possible [a communication link] through the telecommunication cables 1004, such as RS232C, and PC1002 and the printer 1003 are connected possible [a communication link] through the telecommunication cables 1005, such as Centronics.
[0005] The image picturized with the digital camera 1001 is temporarily accumulated in the flash memory with which the digital camera 1001 is equipped as image data. When carrying out the printout of this picturized image, first, a digital camera 1001 and PC1002 are connected with a telecommunication cable 1004, and communicating software is started on PC1002. Subsequently, a communication link is performed by this communicating software between the communicating software in a digital camera 1001, and the image data accumulated in the flash memory of a digital camera 1001 is transmitted to PC1002 through a telecommunication cable 1004. This transmitted image data is temporarily accumulated in the hard disk of PC1002 etc.
[0006] If the image data from a digital camera 1001 is incorporated by PC1002, the printer driver for printer 1003 is started on PC1002, and the image data incorporated by this printer driver from the digital camera 1001 will be outputted to a printer 1003 through a telecommunication cable 1005, after a printer 1003 is changed into the print data in which printing processing is possible. A printer 1003 incorporates print data through a telecommunication cable 1005, and prints and outputs the image which these print data show based on this print data to a print sheet.
[0007]
[Problem(s) to be Solved by the Invention] However, since the actuation on PCs1002, such as starting of the printer driver for changing and outputting connection of the telecommunication cable 1004 for incorporating the image data of a digital camera 1001 to PC1002, starting of communicating software, and the incorporated image data to print data, and an activity are required of the above-mentioned conventional image print system, the actuation for obtaining the printout of the image picturized with the digital camera takes complicated time and effort, and it is troublesome.
[0008] The purpose of this invention is to offer the image print system which can carry out the printout of the image picturized with image pick-up equipment with an airline printer, without imposing time and effort on actuation.

[0009] Other purposes of this invention are to offer the image pick-up equipment and the airline printer which are used for the image print system which can carry out the printout of the image picturized with image pick-up equipment with an airline printer, without imposing time and effort on actuation.

[0010]

[Means for Solving the Problem] In an image print system equipped with the image pick-up equipment which invention according to claim 1 picturizes an image, and generates the image data of this image, and the airline printer which prints the image corresponding to these print data to a print sheet based on the print data in which printing processing is possible The means of communications for communicating between said airline printers to said image pick-up equipment is prepared. A data-conversion means to change the means of communications for communicating between said image pick-up equipment to said airline printer and the image data of said image pick-up equipment into the print data in which said printing processing is possible is established. Said image pick-up equipment transmits said image data through the means of communications, and said airline printer receives directly the image data transmitted from said image pick-up equipment through the means of communications. It is characterized by starting said data-conversion means and changing said image data which received into the print data in which said printing processing is possible.

[0011] In an image print system equipped with the image pick-up equipment which invention according to claim 2 picturizes an image, and generates the image data of this image, and the airline printer which prints the image corresponding to these print data to a print sheet based on the print data in which printing processing is possible The means of communications for communicating between said airline printers, while carrying the data-conversion means for changing into the print data [said image pick-up equipment] which can printing process [said] said image data in ready-for-sending ability is prepared. The means of communications for communicating between said image pick-up equipment to said airline printer is prepared. Said image pick-up equipment transmits said image data and said data-conversion means through the means of communications. It is characterized by for said airline printer receiving directly said image data transmitted from said image pick-up equipment through the means of communications, and said data-conversion means, starting said received data-conversion means, and changing said image data which received into the print data in which said printing processing is possible.

[0012] In an image print system equipped with the image pick-up equipment which invention according to claim 3 picturizes an image, and generates the image data of this image, and the airline printer which prints the image corresponding to these print data to a print sheet based on the print data in which printing processing is possible The means of communications for communicating to said image pick-up equipment between the data-conversion means for changing said image data into the print data in which said printing processing is possible, and said airline printer is prepared. The means of communications for communicating between said image pick-up equipment to said airline printer is prepared. Said image pick-up equipment changes said image data into the print data in which said printing processing is possible with said data-conversion means. It is characterized by transmitting the print data in which this printing processing is possible through the means of communications of this image pick-up equipment, and for said airline printer receiving directly the image data which was transmitted from said image pick-up equipment through the means of communications and in which said printing processing is possible, and printing based on the this received print data in which printing processing is possible.

[0013] The image pick-up equipment which invention according to claim 4 picturizes an image, and generates the image data of this image, The airline printer which prints the image corresponding to these print data to a print sheet based on the print data in which printing processing is possible, In an image print system equipped with the information processor which carries a data-conversion means to change said image data into the print data in which said printing processing is possible in ready-for-sending ability The means of communications for communicating between said airline printers to said image pick-up equipment is prepared. The means of communications for communicating between said image pick-up equipment and said information processors to said airline printer is prepared. The means of communications for communicating between said airline printers to said information processor is prepared. Said information processor transmits said data-conversion means through the means of communications. Pre-image pick-up equipment transmits said image data through the means of communications, and said airline printer receives directly said data-conversion means transmitted from said image data transmitted from said image pick-up equipment through the means of communications, and said information processor. It is characterized by starting said received data-conversion means and changing said image data which received into the print data in which said printing processing is possible.

[0014] In an image print system equipped with the image pick-up equipment which invention according to claim 5 picturizes an image, and generates the image data of this image, and the airline printer which prints the image corresponding to these print data to a print sheet based on the print data in which printing processing is possible The means of communications for communicating between the data-conversion means for changing an additional information generation means to generate the additional information corresponding to said image data to said image pick-up equipment, and said image data into the print data in which said printing processing is possible, and said airline printer is prepared. The means of communications for communicating between said image pick-up equipment to said airline printer is prepared. Said image pick-up equipment changes said image data into the print data in which said printing processing is possible with said data-conversion means. Said additional information is transmitted through the means of communications of this image pick-up equipment with the print data in which this printing processing is possible. Said airline printer receives directly the image data which was transmitted from said image pick-up equipment through the means of communications and in which said printing processing is possible, and said additional information. While printing the image corresponding to these print data to a print sheet based on the print data in which the received this printing processing is possible, it is characterized by printing said received additional information to the outside field of the printing field of said image in said print sheet.

[0015] In an image print system equipped with the image pick-up equipment which invention according to claim 6 picturizes an image, and generates the image data of this image, and the airline printer which prints the image corresponding to these print data to a print sheet based on the print data in which printing processing is possible The means of communications for communicating between the data-conversion means for changing an additional information generation means to generate the additional information corresponding to said image data to said image pick-up equipment, and said image data into the print data in which said printing processing is possible, and said airline printer is prepared. The means of communications for communicating between said image pick-up equipment to said airline printer is prepared. Said image pick-up equipment changes said image data into the print data in which said printing processing is possible with said data-conversion means. ** is transmitted for said additional information through the means of communications of this image pick-up equipment with the print data in which this printing processing is possible. Said airline printer receives directly the print data which were transmitted from said image pick-up equipment through the means of communications and in which said printing processing is possible, and said additional information. While printing the image corresponding to these print data to a print sheet based on the print data in which the received this printing processing is possible When said received additional information is printed to the outside field of the printing field of said image in said print sheet and only the print data in which said printing processing is possible are received While printing the image corresponding to these print data to a print sheet based on the print data in which the received this printing processing is possible, it is characterized by generating the additional information corresponding to the this received print data, and printing this additional information to the outside field of the printing field of said image in said print sheet.

[0016] Invention according to claim 7 is characterized by the means of communications of said image pick-up equipment and the means of communications of said airline printer consisting of a radio means in claim 1 thru/or the image print system of any one publication of six.

[0017] Invention according to claim 8 is characterized by said radio means consisting of infrared means of communications in an image print system according to claim 7.

[0018] Invention according to claim 9 is characterized by said infrared means of communications consisting of means of communications which used the IrDA method in an image print system according to claim 8.

[0019] Invention according to claim 10 is characterized by said infrared means of communications consisting of means of communications which used the ASK method in an image print system according to claim 8.

[0020] Invention according to claim 11 is characterized by the means of communications of said image pick-up equipment and the means of communications of said airline printer consisting of a serial wire communication means in claim 1 thru/or the image print system of any one publication of six.

[0021] Invention according to claim 12 is characterized by said serial wire communication means consisting of means of communications which used the Universal-Serial-Bus method in an image print system according to claim 11.

[0022] Invention according to claim 13 is characterized by said serial wire communication means consisting of means of communications based on the specification of IEEE1394 in an image print system according to claim 11.

[0023] Invention according to claim 14 is characterized by things in an image print system according to claim 1, 2, or 4 from the program described in the language in which said data-conversion means can interpret said airline printer.

[0024] Invention according to claim 15 is characterized by said image pick-up equipment consisting of a digital still camera in claim 1 thru/or the image print system of any one publication of six.

[0025] Invention according to claim 16 establishes the selection means for choosing a printing condition display means display the printing conditions over said image data on said image pick-up equipment, and said displayed printing conditions, in claim 1 thru/or the image print system of any one publication of six, and said data-conversion means carries out performing conversion to said print data of said image data so that it may correspond to said selected printing conditions as the description.

[0026] Invention according to claim 17 is characterized by said printing condition display means serving as a means to display the image which said image pick-up equipment picturized in an image print system according to claim 16.

[0027] Invention according to claim 18 is characterized by said selection means serving as the means for choosing the photography mode in said image pick-up equipment in an image print system according to claim 16.

[0028] Invention according to claim 19 is characterized by said airline printer consisting of an ink jet printer in claim 1 thru/or the image print system of any one publication of six.

[0029] Invention according to claim 20 is characterized by said information processor consisting of a personal computer in an image print system according to claim 4.

[0030] Invention according to claim 21 is characterized by said additional information consisting of information containing the date data which picturized said image in an image print system according to claim 5.

[0031] Invention according to claim 22 is characterized by said additional information consisting of information containing the name of said image pick-up equipment in an image print system according to claim 5.

[0032] Invention according to claim 23 is characterized by transmitting said additional information to said airline printer from said image pick-up equipment by the character code in an image print system according to claim 5.

[0033] In the image pick-up equipment for invention according to claim 24 having two incomes with the airline printer which carries a data-conversion means to change the 1st means of communications and image data into the print data in which printing processing is possible, and constituting an image print system It has an image pick-up means to picturize an image and to generate the image data of this image, and the means of communications of said airline printer and the 2nd means of communications which can communicate directly, and is characterized by carrying out the direct communication of said image data to said airline printer through said 2nd means of communications.

[0034] In the airline printer for invention according to claim 25 having two incomes with the image pick-up equipment which carries the 1st means of communications, picturizes an image, and generates the image data of this image, and constituting an image print system The 1st means of communications of said image pick-up equipment, and the 2nd means of communications in which direct communication is possible, It has a data-conversion means to change the image data of said image pick-up equipment into the print data in which said printing processing is possible. It is characterized by receiving directly the image data transmitted through said 1st means of communications from said image pick-up equipment through said 2nd means of communications, starting said data-conversion means, and changing said image data which received into the print data in which said printing processing is possible.

[0035] In the image pick-up equipment for invention according to claim 26 having two incomes with the airline printer which carries the 1st means of communications, and constituting an image print system While carrying a data-conversion means for said airline printer to change said image data into the print data in which printing processing is possible in ready-for-sending ability, the 1st means of communications of said airline printer and the 2nd means of communications in which direct communication is possible are prepared. It is characterized by transmitting said image data and said data-conversion means to said airline printer through said 2nd means of communications.

[0036] In the airline printer for invention according to claim 27 having two incomes with the image pick-up equipment which carries the data-conversion means for changing into the 1st means of communications and the print data which can printing process the picturized image data of an image, and constituting an image print system The 1st means of communications of said image pick-up equipment and the 2nd means of communications in which direct communication is possible are prepared. Said image data transmitted through said 1st means of communications from said image pick-up equipment and said data-conversion means are directly received through said 2nd means of communications. The airline printer characterized by starting the received this data-conversion means and changing said image data which received into the print data in which said printing processing is possible.

[0037] In the image pick-up equipment for invention according to claim 28 having two incomes with the airline printer which carries the 1st means of communications, and constituting an image print system While carrying a data-conversion means for said airline printer to change the image data of the picturized image into the print data in which printing processing is possible, the 1st means of communications of said airline printer and the 2nd means of communications in which direct communication is possible are prepared. Said image data is changed into said print data with said data-conversion means, and it is characterized by transmitting these print data to said airline printer through said 2nd means of communications.

[0038] In the airline printer for invention according to claim 29 having two incomes with the image pick-up equipment which carries the data-conversion means for changing into the 1st means of communications and the print data which can printing process the picturized image data of an image, and constituting an image print system The 1st means of communications of said image pick-up equipment and the 2nd means of communications in which direct communication is possible are prepared, and it is characterized by receiving directly said print data transmitted through said 1st means of communications from said image pick-up equipment through said 2nd means of communications.

[0039] The image pick-up equipment with which invention according to claim 30 carries the 1st means of communications, In the airline printer for having two incomes with the information processor which carries the data-conversion means in which the transmission for changing the image data of the image which the 2nd means of communications and said image pick-up equipment picturized into the print data in which printing processing is possible is possible, and constituting an image print system The 1st means of communications of said image pick-up equipment, and the 2nd means of communications of said information processor and the 3rd means of communications in which direct communication is possible are prepared. Said data-conversion means transmitted through said 2nd means of communications is directly received through said 3rd means of communications from said image data transmitted through said 1st means of communications from said image pick-up equipment, and said information processor. It is characterized by starting said received data-conversion means and changing said image data which received into the print data in which said printing processing is possible.

[0040] Invention according to claim 31 In the airline printer for having two incomes with the image pick-up equipment which prepared the data-conversion means and the 1st means of communications for changing an additional information generation means to generate the additional information corresponding to the image data of the picturized image, and said image data into the print data in which said printing processing is possible, and building an image print system The 1st means of communications of said image pick-up equipment and the 2nd means of communications in which direct communication is possible are prepared. Said additional information transmitted with said print data through said 1st means of communications from said image pick-up equipment is directly received through said 2nd means of communications. While printing the image corresponding to these print data to a print sheet based on the received this print data, it is characterized by printing said received additional information to the outside field of the printing field of said image in said print sheet.

[0041] In an airline printer according to claim 31, invention according to claim 32 is characterized by generating the additional information corresponding to the this received print data, and printing this additional information to the outside field of the printing field of said image in said print sheet while it prints the image corresponding to these print data to a print sheet based on the this received print data, when only said print data are received.

[0042]

[Embodiment of the Invention] It explains referring to drawing about the gestalt of operation of this invention below.

[0043] (The 1st gestalt of operation) Drawing 1 is the block diagram showing the configuration of the 1st gestalt of operation of the image print system of this invention.

[0044] As an image print system is shown in drawing 1 , it has the digital still camera (henceforth a digital camera) 101 in which infrared I/F (infrared interface)103 is formed, and the printer 102 by which infrared I/F104 is formed, and a communication link is performed by exchanging infrared radiation 105 through each infrared I/F103,104 between a digital camera 101 and a printer 102. When carrying out the printout of the image data which the digital camera 101 accumulated the image data of the picturized image in the flash memory, and was accumulated in this flash memory, this image data is conveyed by the infrared radiation 105 from infrared I/F103. This infrared radiation 105 is received by infrared I/F104 of a printer 102, and image data is taken out from this infrared radiation. The taken-out image data is changed into the print data in which printing processing is possible by the print data-conversion software started on the printer 102, and the printout of the image corresponding to these data is performed based on this print data.

[0045] This print data-conversion software is carried in a digital camera 101, and is transmitted to a printer 102 through infrared I/F103 from a digital camera 101 before the printout of an image. A printer 102 incorporates the print data-conversion software transmitted from the digital camera 102 through infrared I/F104, and holds it in memory etc. When the data format which this print data-conversion software consists of a program which changes the image data of the data format which the digital cameras 101, such as a TIFF format and a JPEG format, adopt into the print data of data format which can process a printer 102, for example, a digital camera 101 adopts is a TIFF format and a printer 102 is an ink jet printer, the image data of a TIFF format is changed into each color data of YMCK. Moreover, when image data is compressed, the processing for thawing this image data is described by print data-conversion software. Furthermore, it is possible to change into the print data corresponding to the mode in which the mode setting processing for setting up various printing modes was included in print data-conversion software, and image data was set up according to the set-up mode.

[0046] In addition, this printer 102 can also be constituted as equipment which has versatility by connecting with a personal computer through an interconnection cable in addition to this, although a direct incorporation printed output is performed for that image data to a digital camera 102 as mentioned above, and doubling and carrying the function which carries out the printed output of the image created on the personal computer inputted through this interconnection cable, the document, etc.

[0047] Next, it explains, referring to drawing 2 thru/or drawing 4 about the detailed configuration of a digital camera and a printer. The block diagram in which drawing 2 shows the configuration of the digital camera of drawing 1 , the block diagram in which drawing 3 shows the configuration of the printer of drawing 1 , and drawing 4 R> 4 are the external views showing the tooth-back side of the digital camera of drawing 1 .

[0048] As shown in drawing 2 , a digital camera 101 picturizes an image and has the image pick-up section 205 which generates the picture signal which shows this image, and the picture signal generated in the image pick-up section 205 is given to the color process-conversion section 206. The color process-conversion section 206 changes a picture signal into image data by color transform processing, and this image data is once accumulated in an image memory 207. It passes through the image data accumulated in the image memory 207 liquid crystal control-section 209, or it is sent out through an internal bus 214 to a flash memory 204.

[0049] The liquid crystal control section 209 drives the liquid crystal display section 208 so that the image data inputted from the image memory 207 or the data from CPU201 may be displayed on a liquid crystal display 208, and the liquid crystal display section 208 is used by this drive as a finder or a monitor. as the data from CPU201 displayed on this liquid crystal display section 208 — various setting information, such as photography mode, time information, etc. — it is — this time information — a time check — it is acquired from equipment 215. this time check — equipment 215 — a calender function — having — the time of power-source OFF of a digital camera 101 — a time check — it is backed up with the rechargeable battery 216 so that actuation can be continued.

[0050] The image data which the flash memory 204 accumulated the image data inputted from the image memory 207, and was accumulated in the flash memory 204 is transmitted to infrared I/F103 through an internal bus 214.

[0051] Infrared I/F103 consists of the IrDA communications control section 212 connected to the internal bus 214, and an infrared transceiver 213. The IrDA communications control section 212 performs strange recovery and serial communication control based on the IrDA (Infrared Data Association) method which is one of the infrared communication modes, and a signal is sent and received between the infrared transceivers 213 according to this communications control. The infrared transceiver 213 changes into corresponding infrared radiation the signal received from the IrDA communications control section 212, sends out this infrared radiation as infrared radiation 105, and it receives infrared radiation 105, changes it into a signal, and sends out this signal to the IrDA communications control section 212. This IrDA method is a half-duplex using infrared radiation, and it is possible to communicate data in both directions.

[0052] Each above-mentioned block is connected to CPU201 through an internal bus 214, and CPU201 performs control to each above-mentioned block by reading and performing the control program stored in ROM202. RAM203 is used as the temporary storage field of the data accompanying control of this CPU201, and a working area of data processing. The system program which described control of the whole camera, and two or more individual programs individial control, such as photography mode, was described to be are included in this control program, and each program is read and performed according to the actuation condition of the switch group 211. Moreover, print data-conversion software is beforehand stored in ROM202 with an above-mentioned control program, and this print data-conversion software is read according to the demand from a printer 102, and is sent out to a printer 102.

[0053] Each switch, such as a shutter switch, a mode change-over switch, an electric power switch, and an image data selecting switch, is included in the switch group 211 so that it may mention later. The actuation condition of each switch of the switch group 211 is sent out to CPU201 through input port 210.

[0054] In this digital camera 101, as shown in drawing 4 R> 4, the shutter switch 404 which accomplishes the switch group 211 on the top face of the body 401, the mode change-over switch 405, the image selecting switch 406, the electric power switch 407, the print switch 408, etc. are arranged. The shutter switch 404 is a switch for directing the image pick-up timing of image pick-up 205, and the mode change-over switch 405 is a switch for switching image pick-up mode / playback mode. The image selecting switch 406 is a switch for choosing the image displayed on the liquid crystal display section at the time of playback mode setting from the images of a flash memory 204, and an electric power switch 407 is a switch for performing ON of a power source, and OFF. The print switch 408 is a switch for directing to transmit the image data for carrying out a printed output to a printer 102. Moreover, the transmission-and-reception aperture 403 the infrared radiation from a printer 102 carries out [the aperture] close outgoing radiation from the infrared transceiver 213 is formed in body 401 side face, and the filter is inserted in this

transmission-and-reception aperture 403. Furthermore, in body 401 tooth back, it is arranged so that the liquid crystal display section 208 may expose the screen 402 outside.
[0055] As a printer 102 is shown in drawing 3 , as mentioned above, it has infrared I/F104, and infrared I/F104 consists of the IrDA communications control section 305 connected to the internal bus 310, and an infrared transceiver 304 like infrared I/F103 of a digital camera 101. The IrDA communications control section 305 performs strange recovery and serial communication control based on an IrDA method, and a signal is sent and received between the infrared transceivers 304 by this communications control. The infrared transceiver 304 changes into corresponding infrared radiation the signal received from the IrDA communications control section 305, sends out this infrared radiation as infrared radiation 105, and it receives infrared radiation 105, changes it into a signal, and sends out this signal to the IrDA communications control section 305.
[0056] If the print data-conversion software from a digital camera 101 is received by infrared I/F104, once print data-conversion software is stored in RAM303 through an internal bus 310, it will be read, and it will be started by CPU301, and the environment where the image data of a digital camera 101 is convertible for the print data in which printing processing is possible will be built by the printer 102. If the image data from a digital camera 101 is received by infrared I/F104, the image data which received will be changed into print data by processing of CPU301 in which the started print data-conversion software is followed, and this printer data will be transmitted to the printer engine control circuit 308 through an internal bus 310.
[0057] The printer engine control circuit 308 controls the drive of printer engine 309 based on print data, and printer engine 309 prints the image corresponding to printer data in a form by this control, and it outputs.
[0058] CPU301 performs control to each block with activation of above-mentioned printer data-conversion software according to the control program in which it is stored by ROM302 while connecting with each above-mentioned block through the internal bus 310. RAM303 is used as the temporary storage field of the data accompanying control of this CPU301, and a working area of data processing. The system program which described control of the whole printer, and two or more individual programs the individial control to each block was described to be are included in the control program stored in ROM302, and the program according to each is read and performed according to the actuation condition of the switch group 307.
[0059] Each switch, such as a mode change-over switch, an electric power switch, and a delivery switch, is included in the switch group 307. The actuation condition of each switch of the switch group 307 is sent out to CPU301 through input port 306.
[0060] moreover, the time check whose CPU301 has a calender function — time information is acquired from equipment 311 and a printer job is managed using this time information. a time check — equipment 311 — the time of power-source OFF of a printer 102 — a time check — it is backed up with the rechargeable battery 312 so that actuation can be continued.
[0061] Next, it explains, referring to drawing 5 thru/or drawing 8 about the actuation in the case of printing out the image picturized with the digital camera 101 by the printer 102. The flow chart which shows the control action by CPU of a printer in case the flow chart, drawing 7 , and drawing 8 which show the control action by CPU of a digital camera in case drawing 5 and drawing 6 print out the image picturized with the digital camera of drawing 1 by the printer print out the image picturized with the digital camera of drawing 1 by the printer, drawing showing the example of a selection screen display of a printing mode [in / in drawing 9 / the digital camera of drawing 1], and drawing 10 are drawings showing the example in other modes applicable to the digital camera of drawing 1 of a selection screen display.
[0062] When it prints out the image picturized with the digital camera 101 by the printer 102, in a digital camera 101, control action which follows a predetermined procedure by CPU201 is performed. First, as shown in drawing 5 , it directs to start a communication link in the IrDA communications control section 212 of infrared I/F103 in response to the communication link initiation directions with the printer 102 taken out with step S501 by the depression of a switch 408, and a communication link connection with a printer 102 is set up through infrared I/F103 according to the communications protocol of IrDA.
[0063] Subsequently, it progresses to step S502, in the print data-conversion software demand from a printer 102, if the print data-conversion software demand from waiting and a printer 102 is

received, this printer data-conversion software demand will be answered at step S503, print data-conversion software is read from ROM202, and it transmits to a printer 102 through infrared I/F103.

[0064] The diamond log data for a printing mode setup is sent out to the liquid crystal control section 209, and the liquid crystal control section 209 is controlled by continuing step S504 to display the diamond log data for a printing mode setup on the liquid crystal display section 208. As this control shows to the display screen 402 of the liquid crystal display section 208 at drawing 9 , the selection screen of each printing mode in HQ mode and HS mode is displayed. This HQ mode is the mode in which fine printing is directed, and HS mode is the mode in which high-speed printing is directed.

[0065] Subsequently, it progresses to step S505, and the monitor processing which supervises the actuation situation of each switch of the switch group 211 through input port 210 is started, and it waits for the depression of the mode change-over switch 405 assigned as a selecting switch of a printing mode after the depression of a switch 408, the image data selecting switch 406, and the print switch 408 at continuing step S506. If one of switches is pushed, it judges whether the mode by which selection directions were carried out with the switch pushed at step S507 is HQ mode, and when the mode by which selection directions were carried out is HQ mode, it will progress to step S508, and the setting demand in HQ mode will be transmitted to a printer 102 through infrared I/F103. When the mode by which selection directions were carried out is not HQ mode, it is judged with the mode by which selection directions were carried out being HS mode, and progresses to step S509, and the setting demand in HS mode is transmitted to a printer 102 through infrared I/F103.

[0066] It progresses to step S511 which shows the image data Request to Send from a printer 102 to drawing 6 at step S510 when waiting and the image data Request to Send from a printer 102 are received, after transmitting the setting demand of a printing mode by which selection directions were carried out.

[0067] At step S511, image data is read from a flash memory 204, and this image data is transmitted to a printer 102 through infrared I/F103. After changing into the signal which had the image data which specifically transmitted the image data accumulated in the flash memory 204 to the IrDA communications control section 212 through the internal bus 214, and was transmitted in the IrDA communications control section 212 modulated, it will output to the infrared transceiver 213, and transmission to the printer 102 of image data will be performed by ** which transmits the infrared radiation 105 corresponding to the signal modulated by the infrared transceiver 213.

[0068] If transmission of image data is completed, it progresses to step S512 and the communication link disconnect request between a digital camera 101 and a printer 102 is transmitted to a printer 102 through infrared I/F103, at continuing step S513, infrared-ray-communication cutting processing in which a communication link connection with a printer 102 is cut will be performed according to the communications protocol of IrDA, and this processing will be ended.

[0069] On the other hand, in a printer 102, control action which follows a predetermined procedure by CPU301 is performed. First, as shown in drawing 7 , it directs to start a communication link in the IrDA communications control section 305 of infrared I/F104 in response to the communication link initiation directions with a digital camera 101 at step S601, and a communication link connection with a digital camera 101 is set up through infrared I/F104 according to the communications protocol of IrDA.

[0070] Subsequently, it progresses to step S602, and a print data-conversion software demand is transmitted to a digital camera 101 through infrared I/F104, and it waits for reception of the print data-conversion software from a digital camera 101 at continuing step S603. If reception of print data-conversion software is started, it progresses to step S604, and printer data-conversion software is received and the received print data-conversion software is stored in RAM303.

[0071] If reception of print data-conversion software is completed, it will progress to step S605, print data-conversion software will be started, and the environment of the image data of a digital camera 101 which can be printed will be built in a printer 102.

[0072] Subsequently, progress to step S606, and if waiting and a printing mode setting demand are received, the printing mode setting demand from a digital camera 101 Judge, and when the demanded printing mode is HQ mode, whether the printing mode demanded at step S607 is HQ mode When the printing mode progressed and required of step S608 shown in drawing 8 is not HQ mode, the demanded printing mode progresses to step S614 which judges that is in HS mode and is shown in drawing 8 .

[0073] At step S608, as shown in drawing 8 , a printing mode is set as HQ mode to print data-conversion software. The environment where the image data from a digital camera 101 is changed into the print data corresponding to HQ mode by setup in this HQ mode is set up. At continuing step S609, an image data Request to Send is transmitted through infrared I/F104 to a digital camera 101.

[0074] Subsequently, the infrared radiation 105 which answered the image data Request to Send at step S610, and was transmitted from the digital camera 101 is received, image data is taken out, and image data is changed into the print data corresponding to HQ mode from this infrared radiation 105 at continuing step S611, and printer engine control corresponding to HQ mode is performed at step S612, and the print data in this HQ mode are transmitted to the printer engine control circuit 308 through an internal bus 310. Subsequently, when it judges whether reception of image data was completed at step S613 and reception of image data is not completed, it repeats until reception of image data ends processing from return and this step to step S613 to the above-mentioned step S610.

[0075] If waiting and a communication link disconnect request are received until it progresses to step S620 and receives the communication link disconnect request from a digital camera 101, after reception of image data is completed, at step S621, infrared-ray-communication cutting processing in which a communication link connection with a digital camera 101 is cut through infrared I/F104 will be performed according to the communications protocol of IrDA, and this processing will be ended.

[0076] At step S614, as shown in drawing 8 , a printing mode is set as HS mode to print data-conversion software. The environment where the image data from a digital camera 101 is changed into the print data corresponding to HS mode by setup in this HS mode is set up. At continuing step S615, an image data Request to Send is transmitted through infrared I/F104 to a digital camera 101.

[0077] Subsequently, the infrared radiation 105 which answered the image data Request to Send at step S616, and was transmitted from the digital camera 101 is received, image data is taken out, and image data is changed into the print data corresponding to HS mode from this infrared radiation 105 at continuing step S617, and printer engine control corresponding to HS mode is performed at step S618, and the print data in this HS mode are transmitted to the printer engine control circuit 308 through an internal bus 310. Subsequently, when it judges whether reception of image data was completed at step S619 and reception of image data is not completed, it repeats until reception of image data ends processing from return and this step to step S619 to the above-mentioned step S616.

[0078] If waiting and a communication link disconnect request are received until it progresses to step S620 and receives the communication link disconnect request from a digital camera 101, after reception of image data is completed, at step S621, infrared-ray-communication cutting processing in which a communication link connection with a digital camera 101 is cut through infrared I/F104 will be performed according to the communications protocol of IrDA, and this processing will be ended.

[0079] thus, in the image print system of the gestalt of this operation When it prints out the image picturized with the digital camera 101 by the printer 102, between a digital camera 101 and a printer 102 A communication link connection is set up by exchanging infrared radiation 105 through each infrared I/F103,104. Print data-conversion software is transmitted to a printer 102 with infrared radiation 105. After starting print data-conversion software on a printer 102, image data is transmitted to a printer 102 with infrared radiation 105 from a digital camera 101. Since image data is changed into print data with the print data-conversion software started on the printer 102 The image picturized with the digital camera 101, without making a personal computer intervene between a digital camera 101 and a printer 102 like before can be directly printed out from a printer 102. The actuation for the pudding out of the image picturized with the digital camera 101 does not take time and effort.

[0080] In addition, although the gestalt of this operation explained the example which chooses the mode in in the either HQ mode or the HS modes in the setup of a printing mode, constituting so that other modes may be set up is also possible. For example, when a printer consists of an ink jet printer, it is necessary to perform false halftone processing. It is also possible for some classes to be in this false halftone processing, and for there to be ED (the error diffusion approach), a dither method, etc. as that example, and to carry out the class of this false halftone processing as [be / selectable]. In order to choose the class of false halftone processing, as shown in drawing 10 , false halftone processing of the class for which a user asks can be set up like selection of an above-mentioned printing mode by displaying the dialog of ED and a dither on the display screen 402 of the liquid crystal display section 208, and choosing either by switch actuation.

[0081] Moreover, it is also possible to perform other mode setting, such as a setup of color matching, in addition to an above-mentioned setup, and if the dialog which corresponds for every mode setting of this is displayed on the liquid crystal display section 208 and it is made to perform selection directions according to switch actuation, various kinds of mode setting can be performed easily.

[0082] Furthermore, in case the image which carried print data-conversion software in the digital camera 101, and was picturized with the digital camera 101 is printed out by the printer 102, he is trying to transmit print data-conversion software to a printer 102, but it can replace with this, and it can also constitute from a gestalt of this operation so that the print data-conversion software corresponding to the image data of a digital camera 101 may be beforehand carried in a printer 102. Moreover, the part is carried without carrying all the print data-conversion software in a printer 102, and other parts are carried in a digital camera 101, and in case the image picturized with the digital camera 101 is printed out by the printer 102, you may make it transmit other parts of print data-conversion software to a printer 102. For example, only the software part which thaws the image data compressed in the JPEG format is transmitted from a digital camera 101, and you may make it carry the software part which changes the image data after defrosting into print data in a printer 102.

[0083] Furthermore, with the gestalt of this operation, although the infrared communication mode of an IrDA method is used, it can replace with this, for example, the infrared communication mode of an ASK method can also be used. Moreover, other radio methods using an acoustic wave and an electric wave can also be used, for example, electric-wave methods, such as time-sharing digital-communication methods, such as PHS, and a SUPUKU tram diffusion method, can be used.

[0084] Furthermore, although he is trying to store printer data-conversion software in RAM302 in a printer 102, it replaces with this, storage means, such as a hard disk and a memory card, are established, and you may make it store print data-conversion software in this storage means with the gestalt of this operation.

[0085] Furthermore, although the gestalt of this operation explained the example which prints out the image which the digital still camera picturized, it cannot be overemphasized that it can apply also when it prints out the image photoed in the still mode of a digital camcorder.

[0086] (The 2nd gestalt of operation) Next, it explains, referring to drawing 11 about the 2nd gestalt of operation of this invention. Drawing 11 R> 1 is the block diagram showing the configuration of the 2nd gestalt of operation of the image print system of this invention.

[0087] The gestalten of this operation differ in that print data-conversion software is transmitted to a printer from a personal computer to the 1st gestalt of above-mentioned operation.

[0088] As the image print system of the gestalt of this operation is shown in drawing 11 , it has the digital camera (not shown) with which infrared I/F of an IrDA method is prepared, and the printer 102 by which infrared I/F104 of an IrDA method is formed, and a communication link is performed by exchanging infrared radiation through each infrared I/F between a digital camera and a printer 102. When the image picturized with the digital camera is printed out, the image data of a digital camera is transmitted through infrared I/F, and a printer 102 receives image data through infrared I/F104. The taken-out image data is changed into the print data in which printing processing is possible by the print data-conversion software started on the printer 102, and print-out of the image corresponding to these data is performed based on this print data.

[0089] This print data-conversion software is carried in a personal computer (the following, PC) 901, answers a print data-conversion software Request to Send from a printer 102, and is transmitted as infrared radiation 903 through that infrared I/F902 from PC901. A printer 102 receives the infrared radiation 903 transmitted from PC901 through infrared I/F104, and picks out print data-conversion software from infrared radiation 903. This printer data-conversion software is held at RAM in a printer 102. Infrared I/F902 prepared in this PC901 is based on an IrDA method, and a protocol is used by the communications protocol for transmission of this print data-conversion software based on an IrDA method like the 1st gestalt of above-mentioned operation.

[0090] The timing which advances this print data-conversion software Request to Send is set up for example, at the predetermined time progress time after printer power-source starting completion. In addition, it can also set up so that it may replace with this timing, for example, a print data-conversion software Request to Send may be advanced at other stages before reception of image data. Moreover, print data-conversion software request to receipt is advanced from PC901, this demand is answered, and a printer 102 can send out a transmitting allowed message to PC901.

[0091] (The 3rd gestalt of operation) Next, it explains, referring to drawing 12 about the 3rd gestalt of operation of this invention. Drawing 12 R> 2 is the configuration **** block diagram of the 3rd gestalt of operation of the image print system of this invention.

[0092] The gestalten of this operation differ in that the communication link between a digital camera 101 and a printer 102 is performed through a serial wire communication means to the 1st gestalt of above-mentioned operation, and the other configuration is the same as the 1st gestalt of operation.

[0093] In the image print system of the gestalt of this operation, as shown in drawing 12 , a digital camera 101 and a printer 102 are connected by the serial communication cable 1201, and serial communication between this digital camera 101 and printer 102 is performed according to a USB (Univesal Serial Bus) method. It is also possible to supply power to a digital camera 101 from a printer 102 by the communication mode of this USB method. In addition, it can replace with this USB method and a regular communication mode can also be used for IEEE1394.

[0094] (The 4th gestalt of operation) Next, it explains, referring to drawing 13 thru/or drawing 17 about the 4th gestalt of operation of this invention. The flow chart which shows the control action by CPU of a digital camera in case drawing 13 thru/or drawing 15 print out the image picturized with the digital camera in the 4th gestalt of operation of the image print system of this invention by the printer, The flow chart which shows the control action by CPU of a printer in case drawing 16 prints out the image picturized with the digital camera in the 4th gestalt of operation of the image print system of this invention by the printer, Drawing 17 is drawing showing the example of an image output from the printer in the 4th gestalt of operation of the image print system of this invention.

[0095] The gestalt of this operation changes image data into print data with print data-conversion software in a digital camera 101 to the 1st gestalt of above-mentioned operation. While printing the image corresponding to these data on a form based on the print data which transmitted to the printer the additional information which contains the date data, such as photography time of day, with this print data, and were received in the printer 102 It differs at the point which prints the received additional information on the outside field of the print field of the image in a form, and the configuration of a digital camera 101 and a printer 102 and the communication mode between them are the same.

[0096] First, it explains, referring to drawing 13 thru/or drawing 15 about the detail of the control action by CPU201 of the digital camera 101 in the case of printing out the image picturized with the digital camera 101 by the printer.

[0097] In a digital camera 101, if waiting and an electric power switch 408 are pushed in the depression of an electric power switch 408 (shown in drawing 4) at step 1301 as shown in drawing 13 , the depression of this electric power switch 408 will be recognized through input port 210 at step S1302, and current supply to each block will be performed.

[0098] subsequently, when it judges whether photography mode is set up based on the actuation condition of the mode change-over switch 405 (shown in drawing 4) at step S1303 and photography mode is set up, while it progresses to step S1304 and changing into image data the image picturized in the image pick-up section 205, once resembling an image memory 207 and accumulating in it, it controls to supply this image data to the liquid-crystal control section 209, and to display on the liquid crystal display section 208. The liquid crystal display section 208 will play the role of a finder by display in the liquid crystal display section 208 of this image data.

[0099] At continuing step S1305, when it supervises whether the shutter switch 404 (shown in drawing 4) was pushed through input port 210 and the depression of the shutter switch 404 is not detected, the processing from return and this step is again repeated to step S1303. If the depression of the shutter switch 404 is detected, it progresses to step S1306, and the image data of an image memory 207 is transmitted and stored in the 1st field of a flash memory 204 through an internal bus 214. continuing step S1307 — a time check — the date data are acquired from equipment 215 and this date data is stored in the 2nd field matched with the 1st field of a flash memory 204.

[0100] Subsequently, if a setup in return and photography mode is continuing to the above-mentioned step S1303 when it progresses to step S1308, the existence of the depression of an electric power switch 404 is again detected through input port 210 and the depression of an electric power switch 404 is not detected, the processing from step S1304 will be repeated. In addition, this repeatable number, i.e., the count which can be photoed, is determined by the capacity of a flash memory 204. If the depression of an electric power switch 404 is detected, it will progress to step S1309, the current supply to each block will be suspended, and this processing will be ended. in addition, a time check — since equipment 215 is backed up by the rechargeable battery 216 — a current supply halt to this the block of each — not related — a time check — actuation is continued.

[0101] If photography mode is not set up in step S1303, i.e., judged with the playback mode being set up, it will progress to step S1310 shown in drawing 14 . To be shown in drawing 14 , image data is read from a flash memory 204, and it controls by step S1310 to supply this image data to the liquid crystal control section 209, and to display on the liquid crystal display section 208. The liquid crystal display section 208 will play the role of a monitor by display in the liquid crystal display section 208 of this image data.

[0102] It progresses to step S1318 which shows drawing 15 whether the print switch 408 (shown in drawing 4) was pushed through input port 210 when it detects and the depression of the print switch 408 is not detected at continuing step S1311. At step S1318, if it detects whether the image selecting switch 406 (shown in drawing 4) was pushed through input port 210 and the depression of the image selecting switch 406 is detected, it will progress to step S1319, and if the depression of the image selecting switch 406 is not detected, it will return to step S1303 again. The following image data is read from a flash memory 204, and it controls by step S1319 to supply this image data to the liquid crystal control section 209, and to display on the liquid crystal display section 208, and after displaying this image data, it returns to step S1311.

[0103] If the depression of the print switch 408 is detected in step S1311, it progresses to step S1312 and image data is read from a flash memory 204 with print data-conversion software, it will change into print data and printer data will be transmitted to a printer 102 with infrared radiation 105 from infrared I/F103 at continuing step S1313. Transmission of the print data from this infrared I/F103 is performed like the 1st gestalt of above-mentioned operation.

[0104] While progressing to step S1314 after transmission of print data, reading the date data matched with image data from a flash memory 204, changing into a character code and transmitting this character code to a printer 102 with infrared radiation 105 from infrared I/F103, the digital camera name beforehand stored in ROM202 at continuing step S1315 is read, it changes into a character code, and this character code is transmitted to a printer 102 with infrared radiation from infrared I/F103.

[0105] subsequently, when it progresses to step S1316, the existence of the depression of an electric power switch 404 is again detected through input port 210 and the depression of an electric power switch 404 is not detected If the depression of the image selecting switch 406 is detected by the above-mentioned step S1318 (shown in drawing 15) return and here Progress to step S1319 and the following image data is read from a flash memory 204. If the print switch 408 is pushed on step S1311 return and here after controlling to supply this image data to the liquid crystal control section 209, and to display on the liquid crystal display section 208 and displaying this image data After this following image data is changed into print data, it will be transmitted to a printer 102.

[0106] If the depression of an electric power switch 404 is detected in step S1316, it will progress to step S1317, the current supply to each block will be suspended, and this processing will be ended.

[0107] On the other hand, in a printer 102, as shown in drawing 16 , it first judges whether the data which the infrared radiation received at step S1602 shows infrared reception at step S1601 when waiting and infrared radiation are received are print data. If it is print data, by step S1603, this received print data will once be stored in RAM303, and the print data stored in RAM303 will be transmitted to the printer engine control circuit 308 through an internal bus 310 at continuing step S1604. The printer engine control circuit 308 which received print data controls printer engine 309 to print the image which corresponds based on these print data on a form.

[0108] Subsequently, it progresses to step S1605 and judges whether the print of print data was completed, and it repeats until the print of print data ends processing from return and this step S1601 to step S1605 to step S1601, when the print of print data is not completed.

[0109] The font data which progressed to step S1606 after the print of print data was completed, read the font data corresponding to the character code information which progressed to step S1607 and was received when waiting and character code information were received until it received the character code information transmitted to the degree of print data from the digital camera 101 from ROM302, and was read at continuing step S1608 is transmitted to the printer engine control circuit 308 through an internal bus 310. The printer engine control circuit 308 which received font data controls printer engine 309 to print the alphabetic character which corresponds based on this font data on the outside field of the image print field in a form.

[0110] Subsequently, it progresses to step S1609 and judges whether the print of character code information was completed, and it repeats until the print of character code information ends processing to step S1609 from return and this step S1601 through step S1602 and step S1606 to step S1601, when the print of character code information is not completed.

[0111] After the print of character code information is completed, it progresses to step S1610, a communication link connection with a digital camera 101 is cut according to the communications protocol of IrDA, a form is outputted, and this processing is ended.

[0112] Thus, the form with which the digital camera name is printed on the outside field of the print field of an image (selection image displayed on the liquid crystal display section) and this image picturized with the digital camera with the day entry is outputted from a printer. For example, as shown in drawing 17 , the image (selection image displayed on the liquid crystal display section) 702 picturized with the digital camera is printed on the outputted form 701, and the digital camera name (ABC) 703 is printed on the outside field (bottom field in drawing) of the print field of this printed image 702 with the day entry.

[0113] thus, in the image print system of the gestalt of this operation When it prints out the image picturized with the digital camera by the printer, by performing infrared ray communication between a digital camera and a printer The image picturized with the digital camera, without making a personal computer intervene between a digital camera and a printer like before can be directly printed out from a printer. Moreover, the additional information matched with the image with the image picturized with the digital camera is transmitted to a printer. Since the additional information of an image is automatically printed on the outside field of the image print field of a form by the printer, the photography day of an image, the used camera can be known from the additional information, and the image picturized using the printed-out form can be managed easily.

[0114] In addition, although the additional information which consists of the date data and digital camera names, such as a photography day, is used with the gestalt of this operation The photography mode furthermore set [looking far / the shutter speed of a digital camera, close-up photography, a wide angle] up, The additional information containing the number of pixels, the compressibility of image data, etc. is matched and stored in image data. It is also possible to set up so that this additional information may be printed with image data, and it becomes possible to grasp in this case from the result of print-out of the conditions at the time of a still more detailed image pick-up and the contents of a setting.

[0115] Moreover, it can also constitute so that the means for making the item of additional information selectable suitably may be formed in a digital camera.

[0116] Furthermore, items, such as a photography location, the item, for example, the title, inputted by key input, the weather, and a memorandum, are set up into the item of additional information, and the information which chooses this item and corresponds can be written in by key input.

[0117] (The 5th gestalt of operation) Next, it explains, referring to drawing 18 thru/or drawing 20 about the 5th gestalt of operation of this invention. The flow chart and drawing 20 R> 0 which show the control action by CPU of a printer in case drawing 18 and drawing 19 print out the image picturized with the digital camera in the 5th gestalt of operation of the image print system of this invention by the printer are drawing showing the example of an image output from the printer in the 5th gestalt of operation of the image print system of this invention.

[0118] It differs at the point which the gestalt of this operation generates additional information in a printer, and prints it on the outside field of the print field of an image [in / for this generated additional information / a form] when additional information is not transmitted to a printer from a digital camera to the 4th gestalt of above-mentioned operation, and the configuration of a digital camera and a printer and the communication mode between them are the same.

[0119] In the gestalt of this operation, as shown in drawing 18 , except for step S1806, the contents of processing from step S1801 to step S1811 are the same as the contents of processing from step S1601 shown in drawing 16 in the 4th gestalt of above-mentioned operation to step S1610, it states briefly and explanation of the same step is explained to a detail about an abbreviation or a different step.

[0120] After the print of print data is completed with reference to drawing 18 , it progresses to step S1812 which shows drawing 19 whether additional information was transmitted with print data from the digital camera 101 when it judges and additional information is not transmitted in step S1806. step S1812 shows to drawing 19 — as — a time check — the date data are acquired and the acquired date data are cconverted with a character code from equipment 312 at continuing step S1813.

[0121] Subsequently, it progresses to step S1814 and the font data which read the font data corresponding to a character code, and read it from ROM302 at continuing step S1815 is transmitted to the printer engine control circuit 308 through an internal bus 310. The printer engine control circuit 308 which received font data controls printer engine 309 to print the alphabetic character (printed date) which corresponds based on this font data on the outside field of the image print field in a form.

[0122] Subsequently, at step S1817 which progresses to step S1816, acquires the character code of a printer name and continues from ROM302, the font data corresponding to the character code acquired from ROM302 is read, and the font data read at step S1818 is transmitted to the printer engine control circuit 308 through an internal bus 310. The printer engine control circuit 308 which received font data controls printer engine 309 to print the alphabetic character (print name) which corresponds based on this font data on the outside field of the image print field in a form.

[0123] Subsequently, it progresses to step S1811, a communication link connection with a digital camera is cut according to the communications protocol of IrDA, a form is outputted, and this processing is ended.

[0124] Thus, when additional information is not transmitted from a digital camera, in a printer, additional information (the date of a print, printer name) is generated, and the form with which the additional information by which generation was carried out [above-mentioned] is printed on the outside field of the print field of an image and this image picturized with the digital camera is outputted from a printer. For example, as shown in drawing 20 , the form 901 with which the image (selection image displayed on the liquid crystal display section 208) 902 picturized with the digital camera 101 was printed, and the printing day and the printer name (XYZ) 903 were printed on the outside field (bottom field in drawing) of the print field of this printed image 902 is outputted.

[0125] Thus, in the image print system of the gestalt of this operation, when additional information is not transmitted from a digital camera 101, additional information is generated in a printer 102, since this generated additional information is automatically printed on the outside field of the print field of the image in a form, the printing day of an image, the used printer can be known from that additional information, and it becomes possible to guess the image pick-up day of an image from this printing day etc.

[0126]

[Effect of the Invention] As explained above, according to the image print system according to claim 1 Prepare the means of communications for communicating between airline printers to image pick-up equipment, and a data-conversion means to change the means of communications for communicating between image pick-up equipment to an airline printer and the image data of image pick-up equipment into the print data in which printing processing is possible is established. The image data which transmitted image data through the means of communications with image pick-up equipment, and was transmitted from image pick-up equipment through the means of communications with the airline printer is received directly. The printout of the image picturized with image pick-up equipment can be carried out with an airline printer, without imposing time and effort on actuation, since the image data which started the data-conversion means and received is changed into the print data in which printing processing is possible.

[0127] The means of communications for communicating between airline printers, while carrying the data-conversion means for changing into the print data [image pick-up equipment] which can printing process image data in ready-for-sending ability according to the image print system according to claim 2 is prepared. Prepare the means of communications for communicating between image pick-up equipment in an airline printer, and image data and a data-conversion means are transmitted to it through the means of communications with image pick-up equipment. The image data and data-conversion means which were transmitted from image pick-up equipment through the means of communications with the airline printer are received directly. The printout of the image picturized with image pick-up equipment can be carried out with an airline printer, without imposing time and effort on actuation, since the image data which started the received data-conversion means and received is changed into the print data in which printing processing is possible.

[0128] The means of communications for communicating to image pick-up equipment between the data-conversion means for changing image data into the print data in which printing processing is possible, and an airline printer according to the image print system according to claim 3 is prepared. Prepare the means of communications for communicating between image pick-up equipment to an airline printer, and image data is changed into the print data in which printing processing is possible with a data-conversion means in image pick-up equipment. The print data in which this printing processing is possible are transmitted through the means of communications of this image pick-up equipment. The printout of the image picturized with image pick-up equipment can be carried out with an airline printer, without imposing time and effort on actuation, since the image data which was transmitted from image pick-up equipment through the means of communications with the airline printer and in which printing processing is possible is received directly and it prints based on the this received print data in which printing processing is possible.

[0129] According to the image print system according to claim 4, the means of communications for communicating between airline printers to image pick-up equipment is prepared. The means of communications for communicating between image pick-up equipment and an information processor to an airline printer is prepared. The means of communications for communicating between airline printers to an information processor is prepared. Transmit a data-conversion means through the means of communications from an information processor, and image data is transmitted through the means of communications with image pick-up equipment. The data-conversion means transmitted from the image data transmitted from image pick-up equipment through the means of communications with the airline printer and an information processor is received directly. The printout of the image picturized with image pick-up equipment can be carried out with an airline printer, without imposing time and effort on actuation, since the image data which started the received data-conversion means and received is changed into the print data in which printing processing is possible.

[0130] The means of communications for communicating between the data-conversion means for changing the additional information generation means and image data which generate the additional information corresponding to image data to image pick-up equipment into the print data in which printing processing is possible according to the image print system according to claim 5, and an airline printer is prepared. Prepare the means of communications for communicating between image pick-up equipment to an airline printer, and image data is changed into the print data in which printing processing is possible with a data-conversion means in image pick-up equipment.

Additional information is transmitted through the means of communications of this image pick-up equipment with the print data in which this printing processing is possible. The image data and additional information which were transmitted from image pick-up equipment through the means of communications with the airline printer and in which printing processing is possible are received directly. Since the image corresponding to these print data is printed to a print sheet based on the print data in which the received this printing processing is possible, while being able to carry out the printout of the image picturized with image pick-up equipment with an airline printer, without imposing time and effort on actuation The photography day of an image, the used camera can be known from the additional information, and the image picturized using the outputted print sheet can be managed easily.

[0131] The means of communications for communicating between the data-conversion means for changing the additional information generation means and image data which generate the additional information corresponding to image data to image pick-up equipment into the print data in which printing processing is possible according to the image print system according to claim 6, and an airline printer is prepared. Prepare the means of communications for communicating between image pick-up equipment to an airline printer, and image data is changed into the print data in which printing processing is possible with a data-conversion means in image pick-up equipment. ** is transmitted for additional information through the means of communications of this image pick-up equipment with the print data in which this printing processing is possible. While receiving directly the print data and additional information which were transmitted from image pick-up equipment through the means of communications with the airline printer and in which printing processing is possible and printing the image corresponding to these print data to a print sheet based on the this received print data in which printing processing is possible When the received additional information is printed to the outside field of the printing field of the image in a print sheet and only the print data in which printing processing is possible are received While printing the image corresponding to these print data to a print sheet based on the print data in which the received this printing processing is possible Since the additional information corresponding to the received this print data is generated and this additional information is printed to the outside field of the printing field of the image in a print sheet While being able to carry out the printout of the image picturized with image pick-up equipment with an airline printer, without imposing time and effort on actuation, it becomes possible to guess the image pick-up day of an image etc. easily using the print sheet which could know a printing day and used ********** and was outputted from the additional information.

[0132] According to the image print system according to claim 7, the means of communications of image pick-up equipment and the means of communications of an airline printer can consist of radio means.

[0133] According to the image print system according to claim 8, a radio means can consist of infrared means of communications.

[0134] According to the image print system according to claim 9, infrared means of communications can consist of means of communications using an IrDA method.

[0135] According to the image print system according to claim 10, infrared means of communications can consist of means of communications using an ASK method.

[0136] According to the image print system according to claim 11, the means of communications of image pick-up equipment and the means of communications of an airline printer can also consist of serial wire communication means.

[0137] According to the image print system according to claim 12, a serial wire communication means can consist of means of communications using a Universal-Serial-Bus method.

[0138] According to the image print system according to claim 13, a serial wire communication means can consist of means of communications based on the specification of IEEE1394.

[0139] According to the image print system according to claim 14, a data-conversion means can consist of programs described in the language which can interpret an airline printer.

[0140] According to the image print system according to claim 15, it is possible to make image pick-up equipment into a digital still camera.

[0141] The selection means for choosing the printing conditions displayed as a printing condition display means display the printing conditions over image data on image pick-up equipment according to the image print system according to claim 16 establishes, and since conversion to the print data of image data carries out so that it may correspond to the printing conditions chosen with the data-conversion means, the output of the image printed on desired printing conditions can obtain.

[0142] According to the image print system according to claim 17, since a printing condition display means serves as a means to display the image which image pick-up equipment picturized, enlargement of image pick-up equipment can be prevented.

[0143] According to the image print system according to claim 18, since it serves as a means for a selection means to choose the photography mode in image pick-up equipment, enlargement of image pick-up equipment can be prevented.

[0144] According to the image print system according to claim 19, an ink jet printer can be used as an airline printer.

[0145] According to the image print system according to claim 20, a personal computer can be used as an information processor.

[0146] According to the image print system according to claim 21, since additional information consists of information containing the date data which picturized the image, the image pick-up day of an image can be known from the outputted print sheet.

[0147] According to the image print system according to claim 22, since additional information consists of information containing the name of image pick-up equipment, the image pick-up equipment which picturized the image from the outputted print sheet can be known.

[0148] According to the image print system according to claim 23, additional information can be transmitted to an airline printer from image pick-up equipment by the character code.

[0149] According to image pick-up equipment according to claim 24, 26, or 28, the suitable image pick-up equipment for the image print system which can carry out the printout of the image picturized with image pick-up equipment with an airline printer can be constituted, without imposing time and effort on actuation.

[0150] According to the airline printer according to claim 25, 27, 29, or 30, the suitable airline printer for the image print system which can carry out the printout of the image picturized with image pick-up equipment with an airline printer can be constituted, without imposing time and effort on actuation.

[0151] While it is possible to carry out the printout of the image picturized with image pick-up equipment with an airline printer according to the airline printer according to claim 31 or 32, without imposing time and effort on actuation, the suitable airline printer for the image print system which can manage easily the image picturized using the print sheet with which the additional information was printed can be constituted.

[Translation done.]

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TECHNICAL FIELD

[Field of the Invention] This invention relates to the suitable image pick-up equipment and the suitable airline printer for an image print system and this image print system for carrying out the printout of the image picturized with image pick-up equipment with an airline printer.

[Translation done.]

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PRIOR ART

[Description of the Prior Art] A personal computer (henceforth PC) is used for the image print system for generally carrying out the printout of the image picturized with the digital camera by the printer, image data is incorporated from image pick-up equipment, a printer changes this image data into the print data in which printing processing is possible, and PC outputs it to a printer.
[0003] It explains concretely, referring to drawing 21 about this image print system. Drawing 21 is drawing showing the conventional example of the image print structure of a system.
[0004] As an image print system is shown in drawing 21 , it consists of a digital camera 1001, PC1002, and a printer 1003, and a digital camera 1001 and PC1002 are connected possible [a communication link] through the telecommunication cables 1004, such as RS232C, and PC1002 and the printer 1003 are connected possible [a communication link] through the telecommunication cables 1005, such as Centronics.
[0005] The image picturized with the digital camera 1001 is temporarily accumulated in the flash memory with which the digital camera 1001 is equipped as image data. When carrying out the printout of this picturized image, first, a digital camera 1001 and PC1002 are connected with a telecommunication cable 1004, and communicating software is started on PC1002. Subsequently, a communication link is performed by this communicating software between the communicating software in a digital camera 1001, and the image data accumulated in the flash memory of a digital camera 1001 is transmitted to PC1002 through a telecommunication cable 1004. This transmitted image data is temporarily accumulated in the hard disk of PC1002 etc.
[0006] If the image data from a digital camera 1001 is incorporated by PC1002, the printer driver for printer 1003 is started on PC1002, and the image data incorporated by this printer driver from the digital camera 1001 will be outputted to a printer 1003 through a telecommunication cable 1005, after a printer 1003 is changed into the print data in which printing processing is possible. A printer 1003 incorporates print data through a telecommunication cable 1005, and prints and outputs the image which these print data show based on this print data to a print sheet.

[Translation done.]

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EFFECT OF THE INVENTION

[Effect of the Invention] As explained above, according to the image print system according to claim 1 Prepare the means of communications for communicating between airline printers to image pick-up equipment, and a data-conversion means to change the means of communications for communicating between image pick-up equipment to an airline printer and the image data of image pick-up equipment into the print data in which printing processing is possible is established. The image data which transmitted image data through the means of communications with image pick-up equipment, and was transmitted from image pick-up equipment through the means of communications with the airline printer is received directly. The printout of the image picturized with image pick-up equipment can be carried out with an airline printer, without imposing time and effort on actuation, since the image data which started the data-conversion means and received is changed into the print data in which printing processing is possible.
[0127] The means of communications for communicating between airline printers, while carrying the data-conversion means for changing into the print data [image pick-up equipment] which can printing process image data in ready-for-sending ability according to the image print system according to claim 2 is prepared. Prepare the means of communications for communicating between image pick-up equipment in an airline printer, and image data and a data-conversion means are transmitted to it through the means of communications with image pick-up equipment. The image data and data-conversion means which were transmitted from image pick-up equipment through the means of communications with the airline printer are received directly. The printout of the image picturized with image pick-up equipment can be carried out with an airline printer, without imposing time and effort on actuation, since the image data which started the received data-conversion means and received is changed into the print data in which printing processing is possible.
[0128] The means of communications for communicating to image pick-up equipment between the data-conversion means for changing image data into the print data in which printing processing is possible, and an airline printer according to the image print system according to claim 3 is prepared. Prepare the means of communications for communicating between image pick-up equipment to an airline printer, and image data is changed into the print data in which printing processing is possible with a data-conversion means in image pick-up equipment. The print data in which this printing processing is possible are transmitted through the means of communications of this image pick-up equipment. The printout of the image picturized with image pick-up equipment can be carried out with an airline printer, without imposing time and effort on actuation, since the image data which was transmitted from image pick-up equipment through the means of communications with the airline printer and in which printing processing is possible is received directly and it prints based on the this received print data in which printing processing is possible.
[0129] According to the image print system according to claim 4, the means of communications for communicating between airline printers to image pick-up equipment is prepared. The means of communications for communicating between image pick-up equipment and an information processor to an airline printer is prepared. The means of communications for communicating between airline printers to an information processor is prepared. Transmit a data-conversion means through the means of communications from an information processor, and image data is transmitted through the means of communications with image pick-up equipment. The data-

conversion means transmitted from the image data transmitted from image pick-up equipment through the means of communications with the airline printer and an information processor is received directly. The printout of the image picturized with image pick-up equipment can be carried out with an airline printer, without imposing time and effort on actuation, since the image data which started the received data-conversion means and received is changed into the print data in which printing processing is possible.

[0130] The means of communications for communicating between the data-conversion means for changing the additional information generation means and image data which generate the additional information corresponding to image data to image pick-up equipment into the print data in which printing processing is possible according to the image print system according to claim 5, and an airline printer is prepared. Prepare the means of communications for communicating between image pick-up equipment to an airline printer, and image data is changed into the print data in which printing processing is possible with a data-conversion means in image pick-up equipment. Additional information is transmitted through the means of communications of this image pick-up equipment with the print data in which this printing processing is possible. The image data and additional information which were transmitted from image pick-up equipment through the means of communications with the airline printer and in which printing processing is possible are received directly. Since the image corresponding to these print data is printed to a print sheet based on the print data in which the received this printing processing is possible, while being able to carry out the printout of the image picturized with image pick-up equipment with an airline printer, without imposing time and effort on actuation The photography day of an image, the used camera can be known from the additional information, and the image picturized using the outputted print sheet can be managed easily.

[0131] The means of communications for communicating between the data-conversion means for changing the additional information generation means and image data which generate the additional information corresponding to image data to image pick-up equipment into the print data in which printing processing is possible according to the image print system according to claim 6, and an airline printer is prepared. Prepare the means of communications for communicating between image pick-up equipment to an airline printer, and image data is changed into the print data in which printing processing is possible with a data-conversion means in image pick-up equipment. ** is transmitted for additional information through the means of communications of this image pick-up equipment with the print data in which this printing processing is possible. While receiving directly the print data and additional information which were transmitted from image pick-up equipment through the means of communications with the airline printer and in which printing processing is possible and printing the image corresponding to these print data to a print sheet based on the this received print data in which printing processing is possible When the received additional information is printed to the outside field of the printing field of the image in a print sheet and only the print data in which printing processing is possible are received While printing the image corresponding to these print data to a print sheet based on the print data in which the received this printing processing is possible Since the additional information corresponding to the received this print data is generated and this additional information is printed to the outside field of the printing field of the image in a print sheet While being able to carry out the printout of the image picturized with image pick-up equipment with an airline printer, without imposing time and effort on actuation, it becomes possible to guess the image pick-up day of an image etc. easily using the print sheet which could know a printing day and used ********** and was outputted from the additional information.

[0132] According to the image print system according to claim 7, the means of communications of image pick-up equipment and the means of communications of an airline printer can consist of radio means.

[0133] According to the image print system according to claim 8, a radio means can consist of infrared means of communications.

[0134] According to the image print system according to claim 9, infrared means of communications can consist of means of communications using an IrDA method.

[0135] According to the image print system according to claim 10, infrared means of communications can consist of means of communications using an ASK method.

[0136] According to the image print system according to claim 11, the means of communications of image pick-up equipment and the means of communications of an airline printer can also consist of serial wire communication means.

[0137] According to the image print system according to claim 12, a serial wire communication means can consist of means of communications using a Universal-Serial-Bus method.

[0138] According to the image print system according to claim 13, a serial wire communication means can consist of means of communications based on the specification of IEEE1394.

[0139] According to the image print system according to claim 14, a data-conversion means can consist of programs described in the language which can interpret an airline printer.

[0140] According to the image print system according to claim 15, it is possible to make image pick-up equipment into a digital still camera.

[0141] The selection means for choosing the printing conditions displayed as a printing condition display means display the printing conditions over image data on image pick-up equipment according to the image print system according to claim 16 establishes, and since conversion to the print data of image data carries out so that it may correspond to the printing conditions chosen with the data-conversion means, the output of the image printed on desired printing conditions can obtain.

[0142] According to the image print system according to claim 17, since a printing condition display means serves as a means to display the image which image pick-up equipment picturized, enlargement of image pick-up equipment can be prevented.

[0143] According to the image print system according to claim 18, since it serves as a means for a selection means to choose the photography mode in image pick-up equipment, enlargement of image pick-up equipment can be prevented.

[0144] According to the image print system according to claim 19, an ink jet printer can be used as an airline printer.

[0145] According to the image print system according to claim 20, a personal computer can be used as an information processor.

[0146] According to the image print system according to claim 21, since additional information consists of information containing the date data which picturized the image, the image pick-up day of an image can be known from the outputted print sheet.

[0147] According to the image print system according to claim 22, since additional information consists of information containing the name of image pick-up equipment, the image pick-up equipment which picturized the image from the outputted print sheet can be known.

[0148] According to the image print system according to claim 23, additional information can be transmitted to an airline printer from image pick-up equipment by the character code.

[0149] According to image pick-up equipment according to claim 24, 26, or 28, the suitable image pick-up equipment for the image print system which can carry out the printout of the image picturized with image pick-up equipment with an airline printer can be constituted, without imposing time and effort on actuation.

[0150] According to the airline printer according to claim 25, 27, 29, or 30, the suitable airline printer for the image print system which can carry out the printout of the image picturized with image pick-up equipment with an airline printer can be constituted, without imposing time and effort on actuation.

[0151] While it is possible to carry out the printout of the image picturized with image pick-up equipment with an airline printer according to the airline printer according to claim 31 or 32, without imposing time and effort on actuation, the suitable airline printer for the image print system which can manage easily the image picturized using the print sheet with which the additional information was printed can be constituted.

[Translation done.]

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TECHNICAL PROBLEM

[Problem(s) to be Solved by the Invention] However, since the actuation on PCs1002, such as starting of the printer driver for changing and outputting connection of the telecommunication cable 1004 for incorporating the image data of a digital camera 1001 to PC1002, starting of communicating software, and the incorporated image data to print data, and an activity are required of the above-mentioned conventional image print system, the actuation for obtaining the printout of the image picturized with the digital camera takes complicated time and effort, and it is troublesome.
[0008] The purpose of this invention is to offer the image print system which can carry out the printout of the image picturized with image pick-up equipment with an airline printer, without imposing time and effort on actuation.
[0009] Other purposes of this invention are to offer the image pick-up equipment and the airline printer which are used for the image print system which can carry out the printout of the image picturized with image pick-up equipment with an airline printer, without imposing time and effort on actuation.

[Translation done.]

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MEANS

[Means for Solving the Problem] In an image print system equipped with the image pick-up equipment which invention according to claim 1 picturizes an image, and generates the image data of this image, and the airline printer which prints the image corresponding to these print data to a print sheet based on the print data in which printing processing is possible The means of communications for communicating between said airline printers to said image pick-up equipment is prepared. A data-conversion means to change the means of communications for communicating between said image pick-up equipment to said airline printer and the image data of said image pick-up equipment into the print data in which said printing processing is possible is established. Said image pick-up equipment transmits said image data through the means of communications, and said airline printer receives directly the image data transmitted from said image pick-up equipment through the means of communications. It is characterized by starting said data-conversion means and changing said image data which received into the print data in which said printing processing is possible.
[0011] In an image print system equipped with the image pick-up equipment which invention according to claim 2 picturizes an image, and generates the image data of this image, and the airline printer which prints the image corresponding to these print data to a print sheet based on the print data in which printing processing is possible The means of communications for communicating between said airline printers, while carrying the data-conversion means for changing into the print data [said image pick-up equipment] which can printing process [said] said image data in ready-for-sending ability is prepared. The means of communications for communicating between said image pick-up equipment to said airline printer is prepared. Said image pick-up equipment transmits said image data and said data-conversion means through the means of communications. It is characterized by for said airline printer receiving directly said image data transmitted from said image pick-up equipment through the means of communications, and said data-conversion means, starting said received data-conversion means, and changing said image data which received into the print data in which said printing processing is possible.
[0012] In an image print system equipped with the image pick-up equipment which invention according to claim 3 picturizes an image, and generates the image data of this image, and the airline printer which prints the image corresponding to these print data to a print sheet based on the print data in which printing processing is possible The means of communications for communicating to said image pick-up equipment between the data-conversion means for changing said image data into the print data in which said printing processing is possible, and said airline printer is prepared. The means of communications for communicating between said image pick-up equipment to said airline printer is prepared. Said image pick-up equipment changes said image data into the print data in which said printing processing is possible with said data-conversion means. It is characterized by transmitting the print data in which this printing processing is possible through the means of communications of this image pick-up equipment, and for said airline printer receiving directly the image data which was transmitted from said image pick-up equipment through the means of communications and in which said printing processing is possible, and printing based on the this received print data in which printing processing is possible.
[0013] The image pick-up equipment which invention according to claim 4 picturizes an image, and generates the image data of this image, The airline printer which prints the image corresponding to

these print data to a print sheet based on the print data in which printing processing is possible, In an image print system equipped with the information processor which carries a data-conversion means to change said image data into the print data in which said printing processing is possible in ready-for-sending ability The means of communications for communicating between said airline printers to said image pick-up equipment is prepared. The means of communications for communicating between said image pick-up equipment and said information processors to said airline printer is prepared. The means of communications for communicating between said airline printers to said information processor is prepared. Said information processor transmits said data-conversion means through the means of communications. Pre-image pick-up equipment transmits said image data through the means of communications, and said airline printer receives directly said data-conversion means transmitted from said image data transmitted from said image pick-up equipment through the means of communications, and said information processor. It is characterized by starting said received data-conversion means and changing said image data which received into the print data in which said printing processing is possible.

[0014] In an image print system equipped with the image pick-up equipment which invention according to claim 5 picturizes an image, and generates the image data of this image, and the airline printer which prints the image corresponding to these print data to a print sheet based on the print data in which printing processing is possible The means of communications for communicating between the data-conversion means for changing an additional information generation means to generate the additional information corresponding to said image data to said image pick-up equipment, and said image data into the print data in which said printing processing is possible, and said airline printer is prepared. The means of communications for communicating between said image pick-up equipment to said airline printer is prepared. Said image pick-up equipment changes said image data into the print data in which said printing processing is possible with said data-conversion means. Said additional information is transmitted through the means of communications of this image pick-up equipment with the print data in which this printing processing is possible. Said airline printer receives directly the image data which was transmitted from said image pick-up equipment through the means of communications and in which said printing processing is possible, and said additional information. While printing the image corresponding to these print data to a print sheet based on the print data in which the received this printing processing is possible, it is characterized by printing said received additional information to the outside field of the printing field of said image in said print sheet.

[0015] In an image print system equipped with the image pick-up equipment which invention according to claim 6 picturizes an image, and generates the image data of this image, and the airline printer which prints the image corresponding to these print data to a print sheet based on the print data in which printing processing is possible The means of communications for communicating between the data-conversion means for changing an additional information generation means to generate the additional information corresponding to said image data to said image pick-up equipment, and said image data into the print data in which said printing processing is possible, and said airline printer is prepared. The means of communications for communicating between said image pick-up equipment to said airline printer is prepared. Said image pick-up equipment changes said image data into the print data in which said printing processing is possible with said data-conversion means. ** is transmitted for said additional information through the means of communications of this image pick-up equipment with the print data in which this printing processing is possible. Said airline printer receives directly the print data which were transmitted from said image pick-up equipment through the means of communications and in which said printing processing is possible, and said additional information. While printing the image corresponding to these print data to a print sheet based on the print data in which the received this printing processing is possible When said received additional information is printed to the outside field of the printing field of said image in said print sheet and only the print data in which said printing processing is possible are received While printing the image corresponding to these print data to a print sheet based on the print data in which the received this printing processing is possible, it is characterized by generating the additional information corresponding to the this received print data, and printing this additional information to the outside field of the printing field of said image in said print sheet.

[0016] Invention according to claim 7 is characterized by the means of communications of said image pick-up equipment and the means of communications of said airline printer consisting of a radio means in claim 1 thru/or the image print system of any one publication of six.
[0017] Invention according to claim 8 is characterized by said radio means consisting of infrared means of communications in an image print system according to claim 7.
[0018] Invention according to claim 9 is characterized by said infrared means of communications consisting of means of communications which used the IrDA method in an image print system according to claim 8.
[0019] Invention according to claim 10 is characterized by said infrared means of communications consisting of means of communications which used the ASK method in an image print system according to claim 8.
[0020] Invention according to claim 11 is characterized by the means of communications of said image pick-up equipment and the means of communications of said airline printer consisting of a serial wire communication means in claim 1 thru/or the image print system of any one publication of six.
[0021] Invention according to claim 12 is characterized by said serial wire communication means consisting of means of communications which used the Universal-Serial-Bus method in an image print system according to claim 11.
[0022] Invention according to claim 13 is characterized by said serial wire communication means consisting of means of communications based on the specification of IEEE1394 in an image print system according to claim 11.
[0023] Invention according to claim 14 is characterized by things in an image print system according to claim 1, 2, or 4 from the program described in the language in which said data-conversion means can interpret said airline printer.
[0024] Invention according to claim 15 is characterized by said image pick-up equipment consisting of a digital still camera in claim 1 thru/or the image print system of any one publication of six.
[0025] Invention according to claim 16 establishes the selection means for choosing a printing condition display means display the printing conditions over said image data on said image pick-up equipment, and said displayed printing conditions, in claim 1 thru/or the image print system of any one publication of six, and said data-conversion means carries out performing conversion to said print data of said image data so that it may correspond to said selected printing conditions as the description.
[0026] Invention according to claim 17 is characterized by said printing condition display means serving as a means to display the image which said image pick-up equipment picturized in an image print system according to claim 16.
[0027] Invention according to claim 18 is characterized by said selection means serving as the means for choosing the photography mode in said image pick-up equipment in an image print system according to claim 16.
[0028] Invention according to claim 19 is characterized by said airline printer consisting of an ink jet printer in claim 1 thru/or the image print system of any one publication of six.
[0029] Invention according to claim 20 is characterized by said information processor consisting of a personal computer in an image print system according to claim 4.
[0030] Invention according to claim 21 is characterized by said additional information consisting of information containing the date data which picturized said image in an image print system according to claim 5.
[0031] Invention according to claim 22 is characterized by said additional information consisting of information containing the name of said image pick-up equipment in an image print system according to claim 5.
[0032] Invention according to claim 23 is characterized by transmitting said additional information to said airline printer from said image pick-up equipment by the character code in an image print system according to claim 5.
[0033] In the image pick-up equipment for invention according to claim 24 having two incomes with the airline printer which carries a data-conversion means to change the 1st means of communications and image data into the print data in which printing processing is possible, and

constituting an image print system It has an image pick-up means to picturize an image and to generate the image data of this image, and the means of communications of said airline printer and the 2nd means of communications which can communicate directly, and is characterized by carrying out the direct communication of said image data to said airline printer through said 2nd means of communications.

[0034] In the airline printer for invention according to claim 25 having two incomes with the image pick-up equipment which carries the 1st means of communications, picturizes an image, and generates the image data of this image, and constituting an image print system The 1st means of communications of said image pick-up equipment, and the 2nd means of communications in which direct communication is possible, It has a data-conversion means to change the image data of said image pick-up equipment into the print data in which said printing processing is possible. It is characterized by receiving directly the image data transmitted through said 1st means of communications from said image pick-up equipment through said 2nd means of communications, starting said data-conversion means, and changing said image data which received into the print data in which said printing processing is possible.

[0035] In the image pick-up equipment for invention according to claim 26 having two incomes with the airline printer which carries the 1st means of communications, and constituting an image print system While carrying a data-conversion means for said airline printer to change said image data into the print data in which printing processing is possible in ready-for-sending ability, the 1st means of communications of said airline printer and the 2nd means of communications in which direct communication is possible are prepared. It is characterized by transmitting said image data and said data-conversion means to said airline printer through said 2nd means of communications.

[0036] In the airline printer for invention according to claim 27 having two incomes with the image pick-up equipment which carries the data-conversion means for changing into the 1st means of communications and the print data which can printing process the picturized image data of an image, and constituting an image print system The 1st means of communications of said image pick-up equipment and the 2nd means of communications in which direct communication is possible are prepared. Said image data transmitted through said 1st means of communications from said image pick-up equipment and said data-conversion means are directly received through said 2nd means of communications. The airline printer characterized by starting the received this data-conversion means and changing said image data which received into the print data in which said printing processing is possible.

[0037] In the image pick-up equipment for invention according to claim 28 having two incomes with the airline printer which carries the 1st means of communications, and constituting an image print system While carrying a data-conversion means for said airline printer to change the image data of the picturized image into the print data in which printing processing is possible, the 1st means of communications of said airline printer and the 2nd means of communications in which direct communication is possible are prepared. Said image data is changed into said print data with said data-conversion means, and it is characterized by transmitting these print data to said airline printer through said 2nd means of communications.

[0038] In the airline printer for invention according to claim 29 having two incomes with the image pick-up equipment which carries the data-conversion means for changing into the 1st means of communications and the print data which can printing process the picturized image data of an image, and constituting an image print system The 1st means of communications of said image pick-up equipment and the 2nd means of communications in which direct communication is possible are prepared, and it is characterized by receiving directly said print data transmitted through said 1st means of communications from said image pick-up equipment through said 2nd means of communications.

[0039] The image pick-up equipment with which invention according to claim 30 carries the 1st means of communications, In the airline printer for having two incomes with the information processor which carries the data-conversion means in which the transmission for changing the image data of the image which the 2nd means of communications and said image pick-up equipment picturized into the print data in which printing processing is possible is possible, and constituting an image print system The 1st means of communications of said image pick-up equipment, and the 2nd means of communications of said information processor and the 3rd means of communications in which direct communication is possible are prepared. Said data-conversion means transmitted through said 2nd means of communications is directly received through said 3rd means of communications from said image data transmitted through said 1st means of communications from said image pick-up equipment, and said information processor. It is characterized by starting said received data-conversion means and changing said image data which received into the print data in which said printing processing is possible.

[0040] Invention according to claim 31 In the airline printer for having two incomes with the image pick-up equipment which prepared the data-conversion means and the 1st means of communications for changing an additional information generation means to generate the additional information corresponding to the image data of the picturized image, and said image data into the print data in which said printing processing is possible, and building an image print system The 1st means of communications of said image pick-up equipment and the 2nd means of communications in which direct communication is possible are prepared. Said additional information transmitted with said print data through said 1st means of communications from said image pick-up equipment is directly received through said 2nd means of communications. While printing the image corresponding to these print data to a print sheet based on the received this print data, it is characterized by printing said received additional information to the outside field of the printing field of said image in said print sheet.

[0041] In an airline printer according to claim 31, invention according to claim 32 is characterized by generating the additional information corresponding to the this received print data, and printing this additional information to the outside field of the printing field of said image in said print sheet while it prints the image corresponding to these print data to a print sheet based on the this received print data, when only said print data are received.

[0042]

[Embodiment of the Invention] It explains referring to drawing about the gestalt of operation of this invention below.

[0043] (The 1st gestalt of operation) Drawing 1 is the block diagram showing the configuration of the 1st gestalt of operation of the image print system of this invention.

[0044] As an image print system is shown in drawing 1 , it has the digital still camera (henceforth a digital camera) 101 in which infrared I/F (infrared interface)103 is formed, and the printer 102 by which infrared I/F104 is formed, and a communication link is performed by exchanging infrared radiation 105 through each infrared I/F103,104 between a digital camera 101 and a printer 102. When carrying out the printout of the image data which the digital camera 101 accumulated the image data of the picturized image in the flash memory, and was accumulated in this flash memory, this image data is conveyed by the infrared radiation 105 from infrared I/F103. This infrared radiation 105 is received by infrared I/F104 of a printer 102, and image data is taken out from this infrared radiation. The taken-out image data is changed into the print data in which printing processing is possible by the print data-conversion software started on the printer 102, and the printout of the image corresponding to these data is performed based on this print data.

[0045] This print data-conversion software is carried in a digital camera 101, and is transmitted to a printer 102 through infrared I/F103 from a digital camera 101 before the printout of an image. A printer 102 incorporates the print data-conversion software transmitted from the digital camera 102 through infrared I/F104, and holds it in memory etc. When the data format which this print data-conversion software consists of a program which changes the image data of the data format which the digital cameras 101, such as a TIFF format and a JPEG format, adopt into the print data of data format which can process a printer 102, for example, a digital camera 101 adopts is a TIFF format and a printer 102 is an ink jet printer, the image data of a TIFF format is changed into each color data of YMCK. Moreover, when image data is compressed, the processing for thawing this image data is described by print data-conversion software. Furthermore, it is possible to change into the print data corresponding to the mode in which the mode setting processing for setting up various printing modes was included in print data-conversion software, and image data was set up according to the set-up mode.

[0046] In addition, this printer 102 can also be constituted as equipment which has versatility by connecting with a personal computer through an interconnection cable in addition to this, although a direct incorporation printed output is performed for that image data to a digital camera 102 as

mentioned above, and doubling and carrying the function which carries out the printed output of the image created on the personal computer inputted through this interconnection cable, the document, etc.
[0047] Next, it explains, referring to drawing 2 thru/or drawing 4 about the detailed configuration of a digital camera and a printer. The block diagram in which drawing 2 shows the configuration of the digital camera of drawing 1 , the block diagram in which drawing 3 shows the configuration of the printer of drawing 1 , and drawing 4 R> 4 are the external views showing the tooth-back side of the digital camera of drawing 1 .
[0048] As shown in drawing 2 , a digital camera 101 picturizes an image and has the image pick-up section 205 which generates the picture signal which shows this image, and the picture signal generated in the image pick-up section 205 is given to the color process-conversion section 206. The color process-conversion section 206 changes a picture signal into image data by color transform processing, and this image data is once accumulated in an image memory 207. It passes through the image data accumulated in the image memory 207 liquid crystal control-section 209, or it is sent out through an internal bus 214 to a flash memory 204.
[0049] The liquid crystal control section 209 drives the liquid crystal display section 208 so that the image data inputted from the image memory 207 or the data from CPU201 may be displayed on a liquid crystal display 208, and the liquid crystal display section 208 is used by this drive as a finder or a monitor. as the data from CPU201 displayed on this liquid crystal display section 208 — various setting information, such as photography mode, time information, etc. — it is — this time information — a time check — it is acquired from equipment 215. this time check — equipment 215 — a calender function — having — the time of power-source OFF of a digital camera 101 — a time check — it is backed up with the rechargeable battery 216 so that actuation can be continued.
[0050] The image data which the flash memory 204 accumulated the image data inputted from the image memory 207, and was accumulated in the flash memory 204 is transmitted to infrared I/F103 through an internal bus 214.
[0051] Infrared I/F103 consists of the IrDA communications control section 212 connected to the internal bus 214, and an infrared transceiver 213. The IrDA communications control section 212 performs strange recovery and serial communication control based on the IrDA (Infrared Data Association) method which is one of the infrared communication modes, and a signal is sent and received between the infrared transceivers 213 according to this communications control. The infrared transceiver 213 changes into corresponding infrared radiation the signal received from the IrDA communications control section 212, sends out this infrared radiation as infrared radiation 105, and it receives infrared radiation 105, changes it into a signal, and sends out this signal to the IrDA communications control section 212. This IrDA method is a half-duplex using infrared radiation, and it is possible to communicate data in both directions.
[0052] Each above-mentioned block is connected to CPU201 through an internal bus 214, and CPU201 performs control to each above-mentioned block by reading and performing the control program stored in ROM202. RAM203 is used as the temporary storage field of the data accompanying control of this CPU201, and a working area of data processing. The system program which described control of the whole camera, and two or more individual programs individial control, such as photography mode, was described to be are included in this control program, and each program is read and performed according to the actuation condition of the switch group 211. Moreover, print data-conversion software is beforehand stored in ROM202 with an above-mentioned control program, and this print data-conversion software is read according to the demand from a printer 102, and is sent out to a printer 102.
[0053] Each switch, such as a shutter switch, a mode change-over switch, an electric power switch, and an image data selecting switch, is included in the switch group 211 so that it may mention later. The actuation condition of each switch of the switch group 211 is sent out to CPU201 through input port 210.
[0054] In this digital camera 101, as shown in drawing 4 R> 4, the shutter switch 404 which accomplishes the switch group 211 on the top face of the body 401, the mode change-over switch 405, the image selecting switch 406, the electric power switch 407, the print switch 408, etc. are arranged. The shutter switch 404 is a switch for directing the image pick-up timing of image pick-

up 205, and the mode change-over switch 405 is a switch for switching image pick-up mode / playback mode. The image selecting switch 406 is a switch for choosing the image displayed on the liquid crystal display section at the time of playback mode setting from the images of a flash memory 204, and an electric power switch 407 is a switch for performing ON of a power source, and OFF. The print switch 408 is a switch for directing to transmit the image data for carrying out a printed output to a printer 102. Moreover, the transmission-and-reception aperture 403 the infrared radiation from a printer 102 carries out [the aperture] close outgoing radiation from the infrared transceiver 213 is formed in body 401 side face, and the filter is inserted in this transmission-and-reception aperture 403. Furthermore, in body 401 tooth back, it is arranged so that the liquid crystal display section 208 may expose the screen 402 outside.

[0055] As a printer 102 is shown in drawing 3 , as mentioned above, it has infrared I/F104, and infrared I/F104 consists of the IrDA communications control section 305 connected to the internal bus 310, and an infrared transceiver 304 like infrared I/F103 of a digital camera 101. The IrDA communications control section 305 performs strange recovery and serial communication control based on an IrDA method, and a signal is sent and received between the infrared transceivers 304 by this communications control. The infrared transceiver 304 changes into corresponding infrared radiation the signal received from the IrDA communications control section 305, sends out this infrared radiation as infrared radiation 105, and it receives infrared radiation 105, changes it into a signal, and sends out this signal to the IrDA communications control section 305.

[0056] If the print data-conversion software from a digital camera 101 is received by infrared I/F104, once print data-conversion software is stored in RAM303 through an internal bus 310, it will be read, and it will be started by CPU301, and the environment where the image data of a digital camera 101 is convertible for the print data in which printing processing is possible will be built by the printer 102. If the image data from a digital camera 101 is received by infrared I/F104, the image data which received will be changed into print data by processing of CPU301 in which the started print data-conversion software is followed, and this printer data will be transmitted to the printer engine control circuit 308 through an internal bus 310.

[0057] The printer engine control circuit 308 controls the drive of printer engine 309 based on print data, and printer engine 309 prints the image corresponding to printer data in a form by this control, and it outputs.

[0058] CPU301 performs control to each block with activation of above-mentioned printer data-conversion software according to the control program in which it is stored by ROM302 while connecting with each above-mentioned block through the internal bus 310. RAM303 is used as the temporary storage field of the data accompanying control of this CPU301, and a working area of data processing. The system program which described control of the whole printer, and two or more individual programs the individial control to each block was described to be are included in the control program stored in ROM302, and the program according to each is read and performed according to the actuation condition of the switch group 307.

[0059] Each switch, such as a mode change-over switch, an electric power switch, and a delivery switch, is included in the switch group 307. The actuation condition of each switch of the switch group 307 is sent out to CPU301 through input port 306.

[0060] moreover, the time check whose CPU301 has a calender function — time information is acquired from equipment 311 and a printer job is managed using this time information. a time check — equipment 311 — the time of power-source OFF of a printer 102 — a time check — it is backed up with the rechargeable battery 312 so that actuation can be continued.

[0061] Next, it explains, referring to drawing 5 thru/or drawing 8 about the actuation in the case of printing out the image picturized with the digital camera 101 by the printer 102. The flow chart which shows the control action by CPU of a printer in case the flow chart, drawing 7 , and drawing 8 which show the control action by CPU of a digital camera in case drawing 5 and drawing 6 print out the image picturized with the digital camera of drawing 1 by the printer print out the image picturized with the digital camera of drawing 1 by the printer, drawing showing the example of a selection screen display of a printing mode [in / in drawing 9 / the digital camera of drawing 1], and drawing 10 are drawings showing the example in other modes applicable to the digital camera of drawing 1 of a selection screen display.

[0062] When it prints out the image picturized with the digital camera 101 by the printer 102, in a digital camera 101, control action which follows a predetermined procedure by CPU201 is performed. First, as shown in drawing 5 , it directs to start a communication link in the IrDA communications control section 212 of infrared I/F103 in response to the communication link initiation directions with the printer 102 taken out with step S501 by the depression of a switch 408, and a communication link connection with a printer 102 is set up through infrared I/F103 according to the communications protocol of IrDA.

[0063] Subsequently, it progresses to step S502, in the print data-conversion software demand from a printer 102, if the print data-conversion software demand from waiting and a printer 102 is received, this printer data-conversion software demand will be answered at step S503, print data-conversion software is read from ROM202, and it transmits to a printer 102 through infrared I/F103.

[0064] The diamond log data for a printing mode setup is sent out to the liquid crystal control section 209, and the liquid crystal control section 209 is controlled by continuing step S504 to display the diamond log data for a printing mode setup on the liquid crystal display section 208. As this control shows to the display screen 402 of the liquid crystal display section 208 at drawing 9 , the selection screen of each printing mode in HQ mode and HS mode is displayed. This HQ mode is the mode in which fine printing is directed, and HS mode is the mode in which high-speed printing is directed.

[0065] Subsequently, it progresses to step S505, and the monitor processing which supervises the actuation situation of each switch of the switch group 211 through input port 210 is started, and it waits for the depression of the mode change-over switch 405 assigned as a selecting switch of a printing mode after the depression of a switch 408, the image data selecting switch 406, and the print switch 408 at continuing step S506. If one of switches is pushed, it judges whether the mode by which selection directions were carried out with the switch pushed at step S507 is HQ mode, and when the mode by which selection directions were carried out is HQ mode, it will progress to step S508, and the setting demand in HQ mode will be transmitted to a printer 102 through infrared I/F103. When the mode by which selection directions were carried out is not HQ mode, it is judged with the mode by which selection directions were carried out being HS mode, and progresses to step S509, and the setting demand in HS mode is transmitted to a printer 102 through infrared I/F103.

[0066] It progresses to step S511 which shows the image data Request to Send from a printer 102 to drawing 6 at step S510 when waiting and the image data Request to Send from a printer 102 are received, after transmitting the setting demand of a printing mode by which selection directions were carried out.

[0067] At step S511, image data is read from a flash memory 204, and this image data is transmitted to a printer 102 through infrared I/F103. After changing into the signal which had the image data which specifically transmitted the image data accumulated in the flash memory 204 to the IrDA communications control section 212 through the internal bus 214, and was transmitted in the IrDA communications control section 212 modulated, it will output to the infrared transceiver 213, and transmission to the printer 102 of image data will be performed by ** which transmits the infrared radiation 105 corresponding to the signal modulated by the infrared transceiver 213.

[0068] If transmission of image data is completed, it progresses to step S512 and the communication link disconnect request between a digital camera 101 and a printer 102 is transmitted to a printer 102 through infrared I/F103, at continuing step S513, infrared-ray-communication cutting processing in which a communication link connection with a printer 102 is cut will be performed according to the communications protocol of IrDA, and this processing will be ended.

[0069] On the other hand, in a printer 102, control action which follows a predetermined procedure by CPU301 is performed. First, as shown in drawing 7 , it directs to start a communication link in the IrDA communications control section 305 of infrared I/F104 in response to the communication link initiation directions with a digital camera 101 at step S601, and a communication link connection with a digital camera 101 is set up through infrared I/F104 according to the communications protocol of IrDA.

[0070] Subsequently, it progresses to step S602, and a print data-conversion software demand is transmitted to a digital camera 101 through infrared I/F104, and it waits for reception of the print data-conversion software from a digital camera 101 at continuing step S603. If reception of print data-conversion software is started, it progresses to step S604, and printer data-conversion software is received and the received print data-conversion software is stored in RAM303.

[0071] If reception of print data-conversion software is completed, it will progress to step S605, print data-conversion software will be started, and the environment of the image data of a digital camera 101 which can be printed will be built in a printer 102.

[0072] Subsequently, progress to step S606, and if waiting and a printing mode setting demand are received, the printing mode setting demand from a digital camera 101 Judge, and when the demanded printing mode is HQ mode, whether the printing mode demanded at step S607 is HQ mode When the printing mode progressed and required of step S608 shown in drawing 8 is not HQ mode, the demanded printing mode progresses to step S614 which judges that is in HS mode and is shown in drawing 8 .

[0073] At step S608, as shown in drawing 8 , a printing mode is set as HQ mode to print data-conversion software. The environment where the image data from a digital camera 101 is changed into the print data corresponding to HQ mode by setup in this HQ mode is set up. At continuing step S609, an image data Request to Send is transmitted through infrared I/F104 to a digital camera 101.

[0074] Subsequently, the infrared radiation 105 which answered the image data Request to Send at step S610, and was transmitted from the digital camera 101 is received, image data is taken out, and image data is changed into the print data corresponding to HQ mode from this infrared radiation 105 at continuing step S611, and printer engine control corresponding to HQ mode is performed at step S612, and the print data in this HQ mode are transmitted to the printer engine control circuit 308 through an internal bus 310. Subsequently, when it judges whether reception of image data was completed at step S613 and reception of image data is not completed, it repeats until reception of image data ends processing from return and this step to step S613 to the above-mentioned step S610.

[0075] If waiting and a communication link disconnect request are received until it progresses to step S620 and receives the communication link disconnect request from a digital camera 101, after reception of image data is completed, at step S621, infrared-ray-communication cutting processing in which a communication link connection with a digital camera 101 is cut through infrared I/F104 will be performed according to the communications protocol of IrDA, and this processing will be ended.

[0076] At step S614, as shown in drawing 8 , a printing mode is set as HS mode to print data-conversion software. The environment where the image data from a digital camera 101 is changed into the print data corresponding to HS mode by setup in this HS mode is set up. At continuing step S615, an image data Request to Send is transmitted through infrared I/F104 to a digital camera 101.

[0077] Subsequently, the infrared radiation 105 which answered the image data Request to Send at step S616, and was transmitted from the digital camera 101 is received, image data is taken out, and image data is changed into the print data corresponding to HS mode from this infrared radiation 105 at continuing step S617, and printer engine control corresponding to HS mode is performed at step S618, and the print data in this HS mode are transmitted to the printer engine control circuit 308 through an internal bus 310. Subsequently, when it judges whether reception of image data was completed at step S619 and reception of image data is not completed, it repeats until reception of image data ends processing from return and this step to step S619 to the above-mentioned step S616.

[0078] If waiting and a communication link disconnect request are received until it progresses to step S620 and receives the communication link disconnect request from a digital camera 101, after reception of image data is completed, at step S621, infrared-ray-communication cutting processing in which a communication link connection with a digital camera 101 is cut through infrared I/F104 will be performed according to the communications protocol of IrDA, and this processing will be ended.

[0079] thus, in the image print system of the gestalt of this operation When it prints out the image picturized with the digital camera 101 by the printer 102, between a digital camera 101 and a printer 102 A communication link connection is set up by exchanging infrared radiation 105 through each infrared I/F103,104. Print data-conversion software is transmitted to a printer 102 with infrared radiation 105. After starting print data-conversion software on a printer 102, image data is transmitted to a printer 102 with infrared radiation 105 from a digital camera 101. Since image data is changed into print data with the print data-conversion software started on the printer 102 The image picturized with the digital camera 101, without making a personal computer intervene between a digital camera 101 and a printer 102 like before can be directly printed out from a printer 102. The actuation for the pudding out of the image picturized with the digital camera 101 does not take time and effort.

[0080] In addition, although the gestalt of this operation explained the example which chooses the mode in in the either HQ mode or the HS modes in the setup of a printing mode, constituting so that other modes may be set up is also possible. For example, when a printer consists of an ink jet printer, it is necessary to perform false halftone processing. It is also possible for some classes to be in this false halftone processing, and for there to be ED (the error diffusion approach), a dither method, etc. as that example, and to carry out the class of this false halftone processing as [be / selectable]. In order to choose the class of false halftone processing, as shown in drawing 10 , false halftone processing of the class for which a user asks can be set up like selection of an above-mentioned printing mode by displaying the dialog of ED and a dither on the display screen 402 of the liquid crystal display section 208, and choosing either by switch actuation.

[0081] Moreover, it is also possible to perform other mode setting, such as a setup of color matching, in addition to an above-mentioned setup, and if the dialog which corresponds for every mode setting of this is displayed on the liquid crystal display section 208 and it is made to perform selection directions according to switch actuation, various kinds of mode setting can be performed easily.

[0082] Furthermore, in case the image which carried print data-conversion software in the digital camera 101, and was picturized with the digital camera 101 is printed out by the printer 102, he is trying to transmit print data-conversion software to a printer 102, but it can replace with this, and it can also constitute from a gestalt of this operation so that the print data-conversion software corresponding to the image data of a digital camera 101 may be beforehand carried in a printer 102. Moreover, the part is carried without carrying all the print data-conversion software in a printer 102, and other parts are carried in a digital camera 101, and in case the image picturized with the digital camera 101 is printed out by the printer 102, you may make it transmit other parts of print data-conversion software to a printer 102. For example, only the software part which thaws the image data compressed in the JPEG format is transmitted from a digital camera 101, and you may make it carry the software part which changes the image data after defrosting into print data in a printer 102.

[0083] Furthermore, with the gestalt of this operation, although the infrared communication mode of an IrDA method is used, it can replace with this, for example, the infrared communication mode of an ASK method can also be used. Moreover, other radio methods using an acoustic wave and an electric wave can also be used, for example, electric-wave methods, such as time-sharing digital-communication methods, such as PHS, and a SUPUKU tram diffusion method, can be used.

[0084] Furthermore, although he is trying to store printer data-conversion software in RAM302 in a printer 102, it replaces with this, storage means, such as a hard disk and a memory card, are established, and you may make it store print data-conversion software in this storage means with the gestalt of this operation.

[0085] Furthermore, although the gestalt of this operation explained the example which prints out the image which the digital still camera picturized, it cannot be overemphasized that it can apply also when it prints out the image photoed in the still mode of a digital camcorder.

[0086] (The 2nd gestalt of operation) Next, it explains, referring to drawing 11 about the 2nd gestalt of operation of this invention. Drawing 11 R> 1 is the block diagram showing the configuration of the 2nd gestalt of operation of the image print system of this invention.

[0087] The gestalten of this operation differ in that print data-conversion software is transmitted to a printer from a personal computer to the 1st gestalt of above-mentioned operation.

[0088] As the image print system of the gestalt of this operation is shown in drawing 11 , it has the digital camera (not shown) with which infrared I/F of an IrDA method is prepared, and the printer 102 by which infrared I/F104 of an IrDA method is formed, and a communication link is performed by exchanging infrared radiation through each infrared I/F between a digital camera and a printer 102. When the image picturized with the digital camera is printed out, the image data of a digital camera is transmitted through infrared I/F, and a printer 102 receives image data through infrared I/F104. The taken-out image data is changed into the print data in which printing processing is possible by the print data-conversion software started on the printer 102, and print-out of the image corresponding to these data is performed based on this print data.

[0089] This print data-conversion software is carried in a personal computer (the following, PC) 901, answers a print data-conversion software Request to Send from a printer 102, and is transmitted as infrared radiation 903 through that infrared I/F902 from PC901. A printer 102 receives the infrared radiation 903 transmitted from PC901 through infrared I/F104, and picks out print data-conversion software from infrared radiation 903. This printer data-conversion software is held at RAM in a printer 102. Infrared I/F902 prepared in this PC901 is based on an IrDA method, and a protocol is used by the communications protocol for transmission of this print data-conversion software based on an IrDA method like the 1st gestalt of above-mentioned operation.

[0090] The timing which advances this print data-conversion software Request to Send is set up for example, at the predetermined time progress time after printer power-source starting completion. In addition, it can also set up so that it may replace with this timing, for example, a print data-conversion software Request to Send may be advanced at other stages before reception of image data. Moreover, print data-conversion software request to receipt is advanced from PC901, this demand is answered, and a printer 102 can send out a transmitting allowed message to PC901.

[0091] (The 3rd gestalt of operation) Next, it explains, referring to drawing 12 about the 3rd gestalt of operation of this invention. Drawing 12 R> 2 is the configuration **** block diagram of the 3rd gestalt of operation of the image print system of this invention.

[0092] The gestalten of this operation differ in that the communication link between a digital camera 101 and a printer 102 is performed through a serial wire communication means to the 1st gestalt of above-mentioned operation, and the other configuration is the same as the 1st gestalt of operation.

[0093] In the image print system of the gestalt of this operation, as shown in drawing 12 , a digital camera 101 and a printer 102 are connected by the serial communication cable 1201, and serial communication between this digital camera 101 and printer 102 is performed according to a USB (Univesal Serial Bus) method. It is also possible to supply power to a digital camera 101 from a printer 102 by the communication mode of this USB method. In addition, it can replace with this USB method and a regular communication mode can also be used for IEEE1394.

[0094] (The 4th gestalt of operation) Next, it explains, referring to drawing 13 thru/or drawing 17 about the 4th gestalt of operation of this invention. The flow chart which shows the control action by CPU of a digital camera in case drawing 13 thru/or drawing 15 print out the image picturized with the digital camera in the 4th gestalt of operation of the image print system of this invention by the printer, The flow chart which shows the control action by CPU of a printer in case drawing 16 prints out the image picturized with the digital camera in the 4th gestalt of operation of the image print system of this invention by the printer, Drawing 17 is drawing showing the example of an image output from the printer in the 4th gestalt of operation of the image print system of this invention.

[0095] The gestalt of this operation changes image data into print data with print data-conversion software in a digital camera 101 to the 1st gestalt of above-mentioned operation. While printing the image corresponding to these data on a form based on the print data which transmitted to the printer the additional information which contains the date data, such as photography time of day, with this print data, and were received in the printer 102 It differs at the point which prints the received additional information on the outside field of the print field of the image in a form, and the configuration of a digital camera 101 and a printer 102 and the communication mode between them are the same.

[0096] First, it explains, referring to drawing 13 thru/or drawing 15 about the detail of the control action by CPU201 of the digital camera 101 in the case of printing out the image picturized with the digital camera 101 by the printer.

[0097] In a digital camera 101, if waiting and an electric power switch 408 are pushed in the depression of an electric power switch 408 (shown in drawing 4) at step 1301 as shown in drawing 13 , the depression of this electric power switch 408 will be recognized through input port 210 at step S1302, and current supply to each block will be performed.

[0098] subsequently, when it judges whether photography mode is set up based on the actuation condition of the mode change-over switch 405 (shown in drawing 4) at step S1303 and photography mode is set up, while it progresses to step S1304 and changing into image data the image picturized in the image pick-up section 205, once resembling an image memory 207 and accumulating in it, it controls to supply this image data to the liquid-crystal control section 209, and to display on the liquid crystal display section 208. The liquid crystal display section 208 will play the role of a finder by display in the liquid crystal display section 208 of this image data.

[0099] At continuing step S1305, when it supervises whether the shutter switch 404 (shown in drawing 4) was pushed through input port 210 and the depression of the shutter switch 404 is not detected, the processing from return and this step is again repeated to step S1303. If the depression of the shutter switch 404 is detected, it progresses to step S1306, and the image data of an image memory 207 is transmitted and stored in the 1st field of a flash memory 204 through an internal bus 214. continuing step S1307 — a time check — the date data are acquired from equipment 215 and this date data is stored in the 2nd field matched with the 1st field of a flash memory 204.

[0100] Subsequently, if a setup in return and photography mode is continuing to the above-mentioned step S1303 when it progresses to step S1308, the existence of the depression of an electric power switch 404 is again detected through input port 210 and the depression of an electric power switch 404 is not detected, the processing from step S1304 will be repeated. In addition, this repeatable number, i.e., the count which can be photoed, is determined by the capacity of a flash memory 204. If the depression of an electric power switch 404 is detected, it will progress to step S1309, the current supply to each block will be suspended, and this processing will be ended. in addition, a time check — since equipment 215 is backed up by the rechargeable battery 216 — a current supply halt to this the block of each — not related — a time check — actuation is continued.

[0101] If photography mode is not set up in step S1303, i.e., judged with the playback mode being set up, it will progress to step S1310 shown in drawing 14 . To be shown in drawing 14 , image data is read from a flash memory 204, and it controls by step S1310 to supply this image data to the liquid crystal control section 209, and to display on the liquid crystal display section 208. The liquid crystal display section 208 will play the role of a monitor by display in the liquid crystal display section 208 of this image data.

[0102] It progresses to step S1318 which shows drawing 15 whether the print switch 408 (shown in drawing 4) was pushed through input port 210 when it detects and the depression of the print switch 408 is not detected at continuing step S1311. At step S1318, if it detects whether the image selecting switch 406 (shown in drawing 4) was pushed through input port 210 and the depression of the image selecting switch 406 is detected, it will progress to step S1319, and if the depression of the image selecting switch 406 is not detected, it will return to step S1303 again. The following image data is read from a flash memory 204, and it controls by step S1319 to supply this image data to the liquid crystal control section 209, and to display on the liquid crystal display section 208, and after displaying this image data, it returns to step S1311.

[0103] If the depression of the print switch 408 is detected in step S1311, it progresses to step S1312 and image data is read from a flash memory 204 with print data-conversion software, it will change into print data and printer data will be transmitted to a printer 102 with infrared radiation 105 from infrared I/F103 at continuing step S1313. Transmission of the print data from this infrared I/F103 is performed like the 1st gestalt of above-mentioned operation.

[0104] While progressing to step S1314 after transmission of print data, reading the date data matched with image data from a flash memory 204, changing into a character code and transmitting this character code to a printer 102 with infrared radiation 105 from infrared I/F103, the digital camera name beforehand stored in ROM202 at continuing step S1315 is read, it changes into a character code, and this character code is transmitted to a printer 102 with infrared radiation from infrared I/F103.

[0105] subsequently, when it progresses to step S1316, the existence of the depression of an electric power switch 404 is again detected through input port 210 and the depression of an electric power switch 404 is not detected If the depression of the image selecting switch 406 is detected by the above-mentioned step S1318 (shown in drawing 15) return and here Progress to step S1319 and the following image data is read from a flash memory 204. If the print switch 408 is pushed on step S1311 return and here after controlling to supply this image data to the liquid crystal control section 209, and to display on the liquid crystal display section 208 and displaying this image data After this following image data is changed into print data, it will be transmitted to a printer 102.

[0106] If the depression of an electric power switch 404 is detected in step S1316, it will progress to step S1317, the current supply to each block will be suspended, and this processing will be ended.

[0107] On the other hand, in a printer 102, as shown in drawing 16 , it first judges whether the data which the infrared radiation received at step S1602 shows infrared reception at step S1601 when waiting and infrared radiation are received are print data. If it is print data, by step S1603, this received print data will once be stored in RAM303, and the print data stored in RAM303 will be transmitted to the printer engine control circuit 308 through an internal bus 310 at continuing step S1604. The printer engine control circuit 308 which received print data controls printer engine 309 to print the image which corresponds based on these print data on a form.

[0108] Subsequently, it progresses to step S1605 and judges whether the print of print data was completed, and it repeats until the print of print data ends processing from return and this step S1601 to step S1605 to step S1601, when the print of print data is not completed.

[0109] The font data which progressed to step S1606 after the print of print data was completed, read the font data corresponding to the character code information which progressed to step S1607 and was received when waiting and character code information were received until it received the character code information transmitted to the degree of print data from the digital camera 101 from ROM302, and was read at continuing step S1608 is transmitted to the printer engine control circuit 308 through an internal bus 310. The printer engine control circuit 308 which received font data controls printer engine 309 to print the alphabetic character which corresponds based on this font data on the outside field of the image print field in a form.

[0110] Subsequently, it progresses to step S1609 and judges whether the print of character code information was completed, and it repeats until the print of character code information ends processing to step S1609 from return and this step S1601 through step S1602 and step S1606 to step S1601, when the print of character code information is not completed.

[0111] After the print of character code information is completed, it progresses to step S1610, a communication link connection with a digital camera 101 is cut according to the communications protocol of IrDA, a form is outputted, and this processing is ended.

[0112] Thus, the form with which the digital camera name is printed on the outside field of the print field of an image (selection image displayed on the liquid crystal display section) and this image picturized with the digital camera with the day entry is outputted from a printer. For example, as shown in drawing 17 , the image (selection image displayed on the liquid crystal display section) 702 picturized with the digital camera is printed on the outputted form 701, and the digital camera name (ABC) 703 is printed on the outside field (bottom field in drawing) of the print field of this printed image 702 with the day entry.

[0113] thus, in the image print system of the gestalt of this operation When it prints out the image picturized with the digital camera by the printer, by performing infrared ray communication between a digital camera and a printer The image picturized with the digital camera, without making a personal computer intervene between a digital camera and a printer like before can be directly printed out from a printer. Moreover, the additional information matched with the image with the image picturized with the digital camera is transmitted to a printer. Since the additional information of an image is automatically printed on the outside field of the image print field of a form by the printer, the photography day of an image, the used camera can be known from the additional information, and the image picturized using the printed-out form can be managed easily.

[0114] In addition, although the additional information which consists of the date data and digital camera names, such as a photography day, is used with the gestalt of this operation The photography mode furthermore set [looking far / the shutter speed of a digital camera, close-up photography, a wide angle] up, The additional information containing the number of pixels, the compressibility of image data, etc. is matched and stored in image data. It is also possible to set up so that this additional information may be printed with image data, and it becomes possible to grasp in this case from the result of print-out of the conditions at the time of a still more detailed image pick-up and the contents of a setting.

[0115] Moreover, it can also constitute so that the means for making the item of additional information selectable suitably may be formed in a digital camera.

[0116] Furthermore, items, such as a photography location, the item, for example, the title, inputted by key input, the weather, and a memorandum, are set up into the item of additional information, and the information which chooses this item and corresponds can be written in by key input.

[0117] (The 5th gestalt of operation) Next, it explains, referring to drawing 18 thru/or drawing 20 about the 5th gestalt of operation of this invention. The flow chart and drawing 20 R> 0 which show the control action by CPU of a printer in case drawing 18 and drawing 19 print out the image picturized with the digital camera in the 5th gestalt of operation of the image print system of this invention by the printer are drawing showing the example of an image output from the printer in the 5th gestalt of operation of the image print system of this invention.

[0118] It differs at the point which the gestalt of this operation generates additional information in a printer, and prints it on the outside field of the print field of an image [in / for this generated additional information / a form] when additional information is not transmitted to a printer from a digital camera to the 4th gestalt of above-mentioned operation, and the configuration of a digital camera and a printer and the communication mode between them are the same.

[0119] In the gestalt of this operation, as shown in drawing 18 , except for step S1806, the contents of processing from step S1801 to step S1811 are the same as the contents of processing from step S1601 shown in drawing 16 in the 4th gestalt of above-mentioned operation to step S1610, it states briefly and explanation of the same step is explained to a detail about an abbreviation or a different step.

[0120] After the print of print data is completed with reference to drawing 18 , it progresses to step S1812 which shows drawing 19 whether additional information was transmitted with print data from the digital camera 101 when it judges and additional information is not transmitted in step S1806. step S1812 shows to drawing 19 -- as -- a time check -- the date data are acquired and the acquired date data are cconverted with a character code from equipment 312 at continuing step S1813.

[0121] Subsequently, it progresses to step S1814 and the font data which read the font data corresponding to a character code, and read it from ROM302 at continuing step S1815 is transmitted to the printer engine control circuit 308 through an internal bus 310. The printer engine control circuit 308 which received font data controls printer engine 309 to print the alphabetic character (printed date) which corresponds based on this font data on the outside field of the image print field in a form.

[0122] Subsequently, at step S1817 which progresses to step S1816, acquires the character code of a printer name and continues from ROM302, the font data corresponding to the character code acquired from ROM302 is read, and the font data read at step S1818 is transmitted to the printer engine control circuit 308 through an internal bus 310. The printer engine control circuit 308 which received font data controls printer engine 309 to print the alphabetic character (print name) which corresponds based on this font data on the outside field of the image print field in a form.

[0123] Subsequently, it progresses to step S1811, a communication link connection with a digital camera is cut according to the communications protocol of IrDA, a form is outputted, and this processing is ended.

[0124] Thus, when additional information is not transmitted from a digital camera, in a printer, additional information (the date of a print, printer name) is generated, and the form with which the additional information by which generation was carried out [above-mentioned] is printed on the outside field of the print field of an image and this image picturized with the digital camera is outputted from a printer. For example, as shown in drawing 20 , the form 901 with which the image (selection image displayed on the liquid crystal display section 208) 902 picturized with the digital camera 101 was printed, and the printing day and the printer name (XYZ) 903 were printed on the

outside field (bottom field in drawing) of the print field of this printed image 902 is outputted.
[0125] Thus, in the image print system of the gestalt of this operation, when additional information is not transmitted from a digital camera 101, additional information is generated in a printer 102, since this generated additional information is automatically printed on the outside field of the print field of the image in a form, the printing day of an image, the used printer can be known from that additional information, and it becomes possible to guess the image pick-up day of an image from this printing day etc.

[Translation done.]

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DESCRIPTION OF DRAWINGS

[Brief Description of the Drawings]
[Drawing 1] It is the block diagram showing the configuration of the 1st gestalt of operation of the image print system of this invention.
[Drawing 2] It is the block diagram showing the configuration of the digital camera of drawing 1 .
[Drawing 3] It is the block diagram showing the configuration of the printer of drawing 1 .
[Drawing 4] It is the external view showing the tooth-back side of the digital camera of drawing 1 .
[Drawing 5] It is the flow chart which shows the control action by CPU of the digital camera in the case of printing out the image picturized with the digital camera of drawing 1 by the printer.
[Drawing 6] It is the flow chart which shows the control action by CPU of the digital camera in the case of printing out the image picturized with the digital camera of drawing 1 by the printer.
[Drawing 7] It is the flow chart which shows the control action by CPU of the printer in the case of printing out the image picturized with the digital camera of drawing 1 by the printer.
[Drawing 8] It is the flow chart which shows the control action by CPU of the printer in the case of printing out the image picturized with the digital camera of drawing 1 by the printer.
[Drawing 9] It is drawing showing the example of a selection screen display of the printing mode in the digital camera of drawing 1 .
[Drawing 10] It is drawing showing the example of a selection screen display in other modes applicable to the digital camera of drawing 1 .
[Drawing 11] It is the block diagram showing the configuration of the 2nd gestalt of operation of the image print system of this invention.
[Drawing 12] It is the configuration **** block diagram of the 3rd gestalt of operation of the image print system of this invention.
[Drawing 13] It is the flow chart which shows the control action by CPU of the digital camera in the case of printing out the image picturized with the digital camera in the 4th gestalt of operation of the image print system of this invention by the printer.
[Drawing 14] It is the flow chart which shows the control action by CPU of the digital camera in the case of printing out the image picturized with the digital camera in the 4th gestalt of operation of the image print system of this invention by the printer.
[Drawing 15] It is the flow chart which shows the control action by CPU of the digital camera in the case of printing out the image picturized with the digital camera in the 4th gestalt of operation of the image print system of this invention by the printer.
[Drawing 16] It is the flow chart which shows the control action by CPU of the printer in the case of printing out the image picturized with the digital camera in the 4th gestalt of operation of the image print system of this invention by the printer.
[Drawing 17] It is drawing showing the example of an image output from the printer in the 4th gestalt of operation of the image print system of this invention.
[Drawing 18] It is the flow chart which shows the control action by CPU of the printer in the case of printing out the image picturized with the digital camera in the 5th gestalt of operation of the image print system of this invention by the printer.
[Drawing 19] It is the flow chart which shows the control action by CPU of the printer in the case of printing out the image picturized with the digital camera in the 5th gestalt of operation of the image print system of this invention by the printer.

[Drawing 20] It is drawing showing the example of an image output from the printer in the 5th gestalt of operation of the image print system of this invention.
[Drawing 21] It is drawing showing the conventional example of the image print structure of a system.
[Description of Notations]
101 Digital Camera
102 Printer
103,104 Infrared I/F
105 Infrared Radiation
201,301 CPU
202,302 ROM
203,303 RAM
204 Flash Memory
205 Image Pick-up Section
208 Liquid Crystal Display Section
211,307 Switch group
215,311 a time check -- equipment
308 Printer Engine Control Circuit
309 Printer Engine
901 Personal Computer
1201 Serial Communication Cable

[Translation done.]

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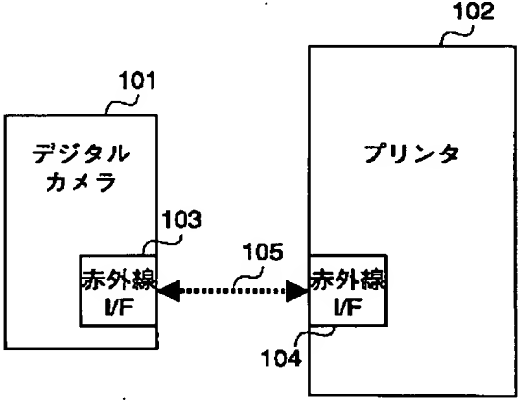
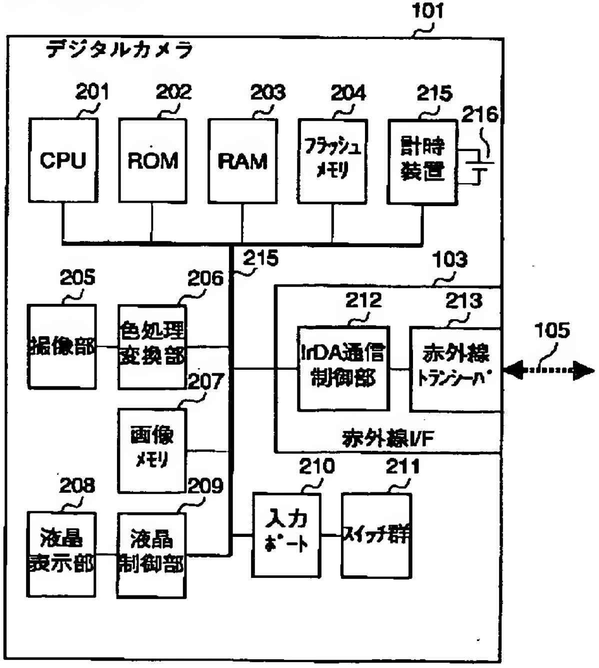
3.In the drawings, any words are not translated.

DRAWINGS

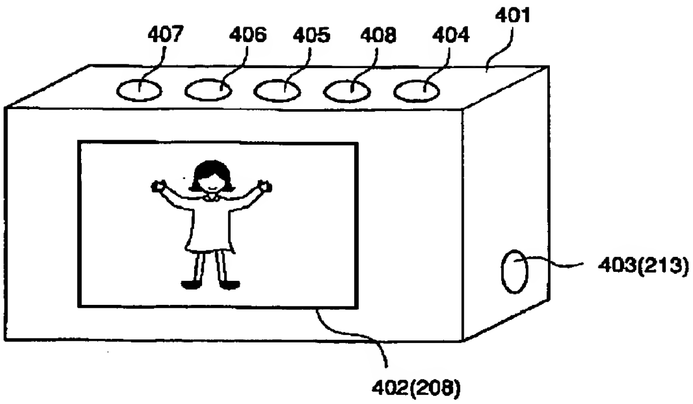
[Drawing 1]


102
101
デジタル
カメラ
プリンタ
103
105
赤外線
I/F
赤外線
I/F
104

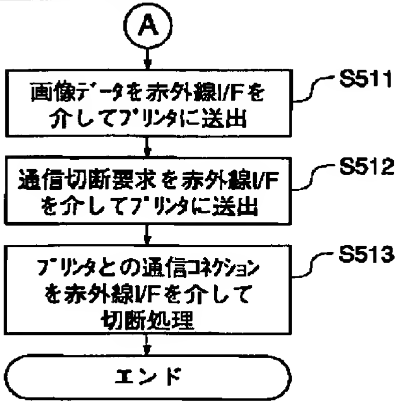
[Drawing 2]


101
デジタルカメラ
201
202
203
204
215
216
CPU
ROM
RAM
ﾌﾗｯｼｭ
ﾒﾓﾘ
計時
装置
205
206
215
103
212
213
105
撮像部
色処理
変換部
207
IrDA通信
制御部
赤外線
ﾄﾗﾝｼｰﾊﾞ
画像
ﾒﾓﾘ
赤外線I/F
208
209
210
211
液晶
表示部
液晶
制御部
入力
ﾎﾟｰﾄ
ｽｲｯﾁ群

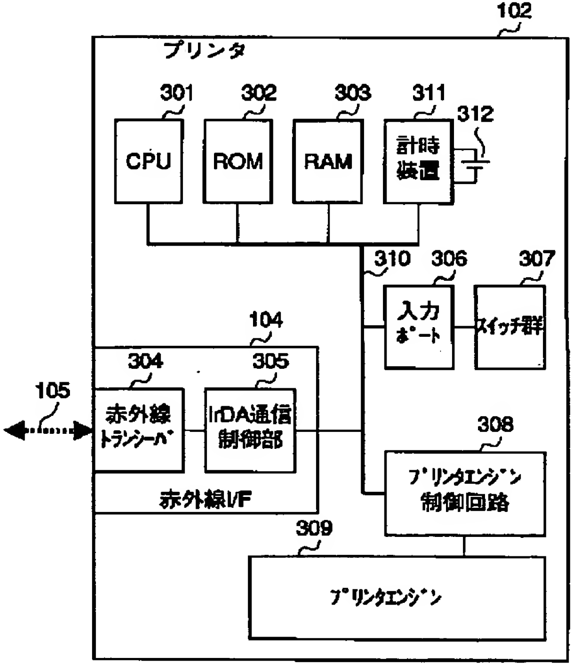
[Drawing 4]


407
406
405
408
404
401
403(213)
402(208)

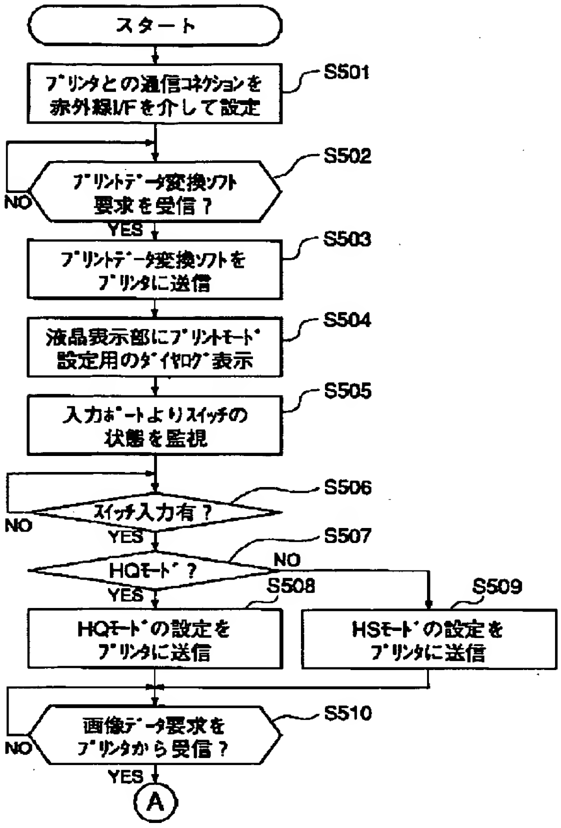
[Drawing 6]


A
画像ﾃﾞｰﾀを赤外線I/Fを介してﾌﾟﾘﾝﾀに送出
S511
通信切断要求を赤外線I/Fを介してﾌﾟﾘﾝﾀに送出
S512
ﾌﾟﾘﾝﾀとの通信ｺﾈｸｼｮﾝを赤外線I/Fを介して切断処理
S513
エンド

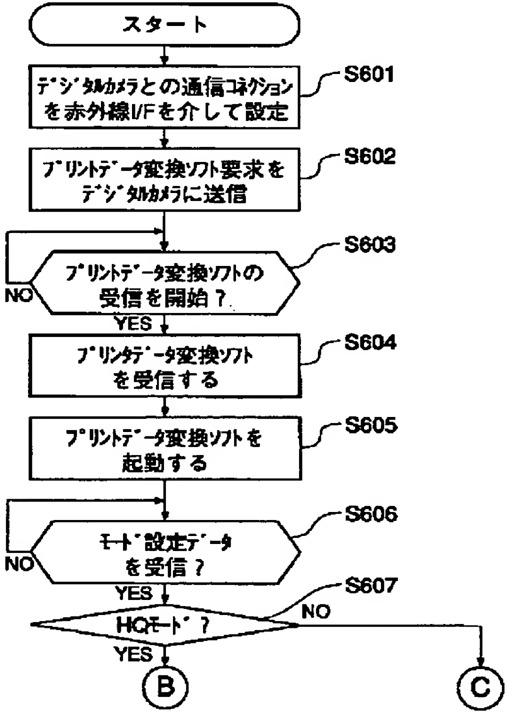
[Drawing 3]


102
プリンタ
301
302
303
311
312
CPU
ROM
RAM
計時装置
310
306
307
入力ﾎﾟｰﾄ
ｽｲｯﾁ群
104
304
305
105
赤外線ﾄﾗﾝｼｰﾊﾞ
IrDA通信制御部
赤外線I/F
308
ﾌﾟﾘﾝﾀｴﾝｼﾞﾝ制御回路
309
ﾌﾟﾘﾝﾀｴﾝｼﾞﾝ

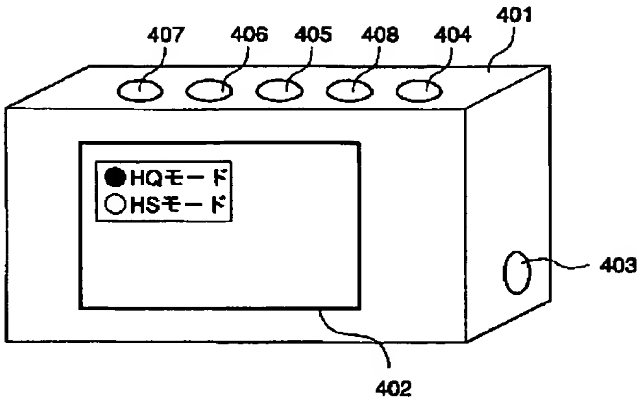
[Drawing 5]


スタート
S501
ﾌﾟﾘﾝﾀとの通信ｺﾈｸｼｮﾝを赤外線I/Fを介して設定
S502
ﾌﾟﾘﾝﾄﾃﾞｰﾀ変換ｿﾌﾄ要求を受信？
NO
YES
S503
ﾌﾟﾘﾝﾄﾃﾞｰﾀ変換ｿﾌﾄをﾌﾟﾘﾝﾀに送信
S504
液晶表示部にﾌﾟﾘﾝﾄﾓｰﾄﾞ設定用のﾀﾞｲﾔﾛｸﾞ表示
S505
入力ﾎﾟｰﾄよりｽｲｯﾁの状態を監視
S506
ｽｲｯﾁ入力有？
NO
YES
S507
HQﾓｰﾄﾞ？
NO
YES
S508
HQﾓｰﾄﾞの設定をﾌﾟﾘﾝﾀに送信
S509
HSﾓｰﾄﾞの設定をﾌﾟﾘﾝﾀに送信
S510
画像ﾃﾞｰﾀ要求をﾌﾟﾘﾝﾀから受信？
NO
YES
A

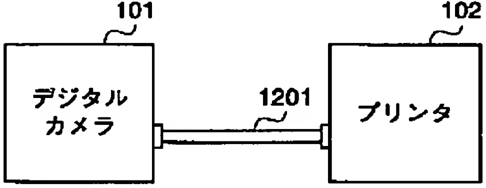
[Drawing 7]


スタート
S601
ﾃﾞｼﾞﾀﾙｶﾒﾗとの通信ｺﾈｸｼｮﾝを赤外線I/Fを介して設定
S602
ﾌﾟﾘﾝﾄﾃﾞｰﾀ変換ｿﾌﾄ要求をﾃﾞｼﾞﾀﾙｶﾒﾗに送信
S603
ﾌﾟﾘﾝﾄﾃﾞｰﾀ変換ｿﾌﾄの受信を開始？
NO
YES
S604
ﾌﾟﾘﾝﾀﾃﾞｰﾀ変換ｿﾌﾄを受信する
S605
ﾌﾟﾘﾝﾄﾃﾞｰﾀ変換ｿﾌﾄを起動する
S606
ﾓｰﾄﾞ設定ﾃﾞｰﾀを受信？
NO
YES
S607
HQﾓｰﾄﾞ？
NO
YES
B
C

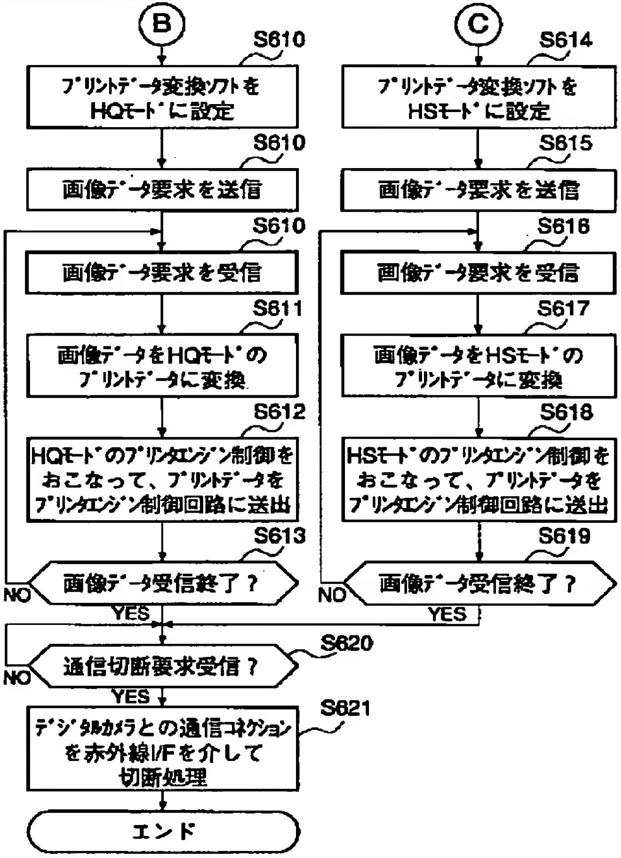
[Drawing 9]


407
406
405
408
404
401
●HQモード
○HSモード
403
402

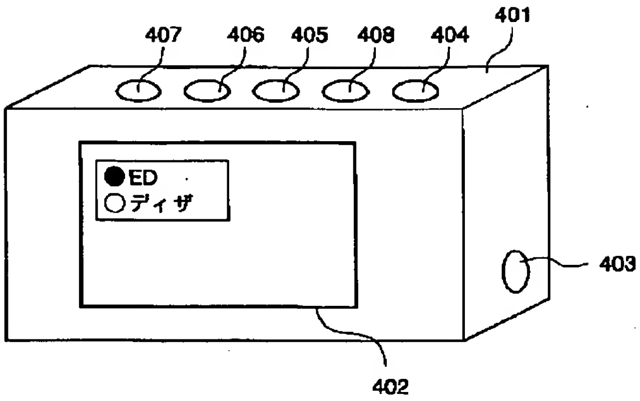
[Drawing 12]


101
102
デジタル
カメラ
1201
プリンタ

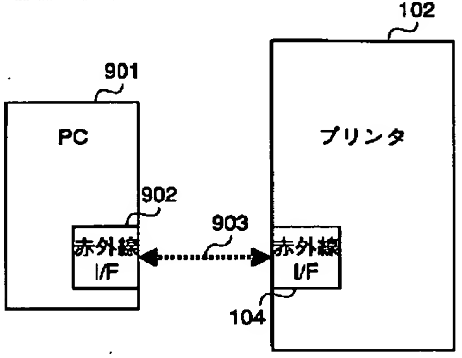
[Drawing 8]


B
S610
ﾌﾟﾘﾝﾄﾃﾞｰﾀ変換ｿﾌﾄを
HQﾓｰﾄﾞに設定
S610
画像ﾃﾞｰﾀ要求を送信
S610
画像ﾃﾞｰﾀ要求を受信
S611
画像ﾃﾞｰﾀをHQﾓｰﾄﾞの
ﾌﾟﾘﾝﾄﾃﾞｰﾀに変換
S612
HQﾓｰﾄﾞのﾌﾟﾘﾝﾀｴﾝｼﾞﾝ制御を
おこなって、ﾌﾟﾘﾝﾄﾃﾞｰﾀを
ﾌﾟﾘﾝﾀｴﾝｼﾞﾝ制御回路に送出
S613
画像ﾃﾞｰﾀ受信終了？
NO
YES
C
S614
ﾌﾟﾘﾝﾄﾃﾞｰﾀ変換ｿﾌﾄを
HSﾓｰﾄﾞに設定
S615
画像ﾃﾞｰﾀ要求を送信
S616
画像ﾃﾞｰﾀ要求を受信
S617
画像ﾃﾞｰﾀをHSﾓｰﾄﾞの
ﾌﾟﾘﾝﾄﾃﾞｰﾀに変換
S618
HSﾓｰﾄﾞのﾌﾟﾘﾝﾀｴﾝｼﾞﾝ制御を
おこなって、ﾌﾟﾘﾝﾄﾃﾞｰﾀを
ﾌﾟﾘﾝﾀｴﾝｼﾞﾝ制御回路に送出
S619
画像ﾃﾞｰﾀ受信終了？
NO
YES
S620
通信切断要求受信？
NO
YES
S621
ﾃﾞｼﾞﾀﾙｶﾒﾗとの通信ｺﾈｸｼｮﾝ
を赤外線I/Fを介して
切断処理
エンド

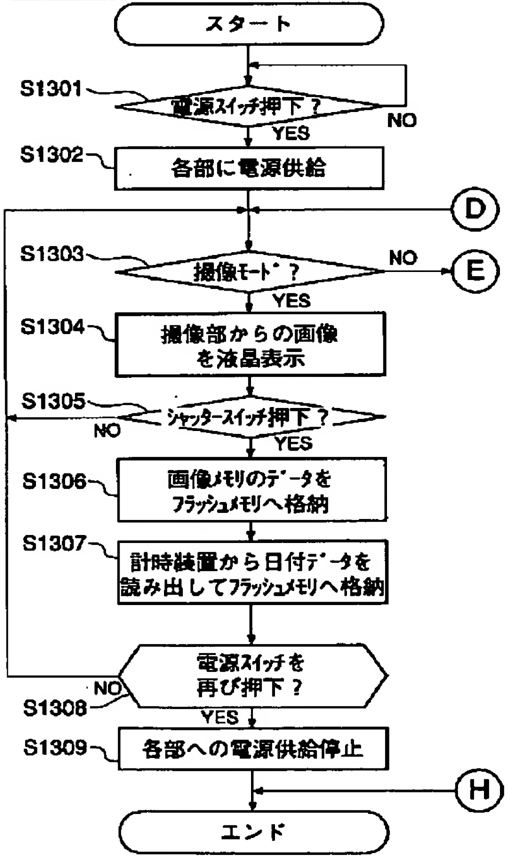
[Drawing 10]


407
406
405
408
404
401
●ED
○ディザ
403
402

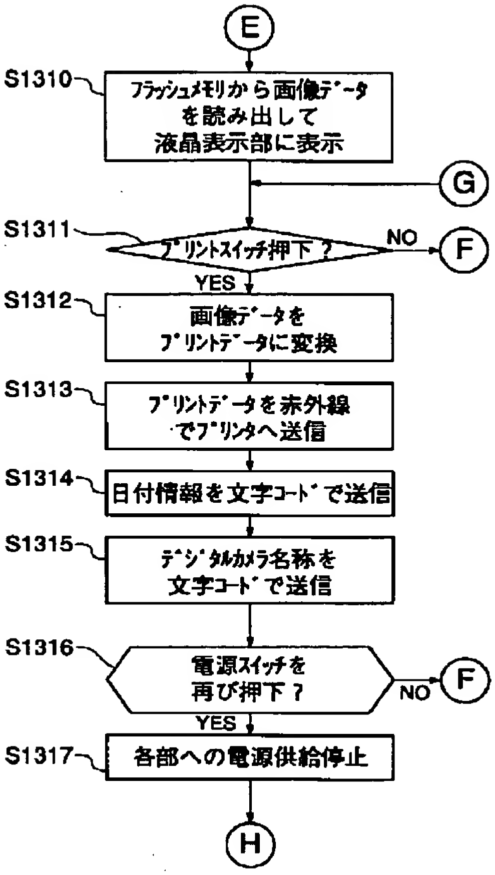
[Drawing 11]


102
901
PC
プリンタ
902
903
赤外線 I/F
赤外線 I/F
104

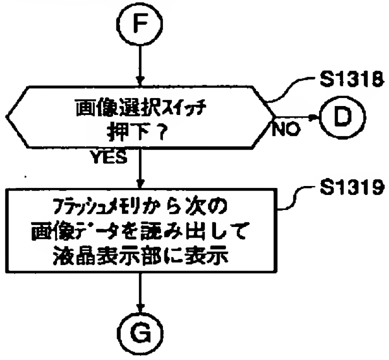
[Drawing 13]


スタート
S1301
電源ｽｲｯﾁ押下？
NO
YES
S1302
各部に電源供給
D
S1303
撮像ﾓｰﾄﾞ？
NO
E
YES
S1304
撮像部からの画像を液晶表示
S1305
ｼｬｯﾀｰｽｲｯﾁ押下？
NO
YES
S1306
画像ﾒﾓﾘのﾃﾞｰﾀをﾌﾗｯｼｭﾒﾓﾘへ格納
S1307
計時装置から日付ﾃﾞｰﾀを読み出してﾌﾗｯｼｭﾒﾓﾘへ格納
電源ｽｲｯﾁを再び押下？
NO
S1308
YES
S1309
各部への電源供給停止
H
エンド

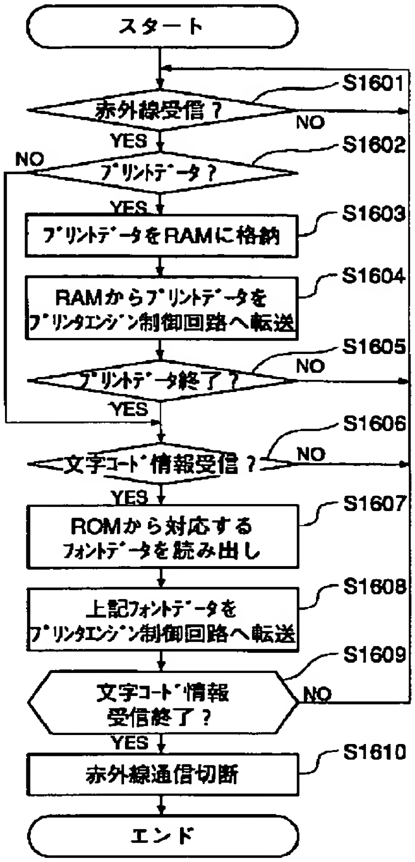
[Drawing 14]


E
S1310
ﾌﾗｯｼｭﾒﾓﾘから画像ﾃﾞｰﾀを読み出して液晶表示部に表示
G
S1311
ﾌﾟﾘﾝﾄｽｲｯﾁ押下？
NO
F
YES
S1312
画像ﾃﾞｰﾀをﾌﾟﾘﾝﾄﾃﾞｰﾀに変換
S1313
ﾌﾟﾘﾝﾄﾃﾞｰﾀを赤外線でﾌﾟﾘﾝﾀへ送信
S1314
日付情報を文字ｺｰﾄﾞで送信
S1315
ﾃﾞｼﾞﾀﾙｶﾒﾗ名称を文字ｺｰﾄﾞで送信
S1316
電源ｽｲｯﾁを再び押下？
NO
F
YES
S1317
各部への電源供給停止
H

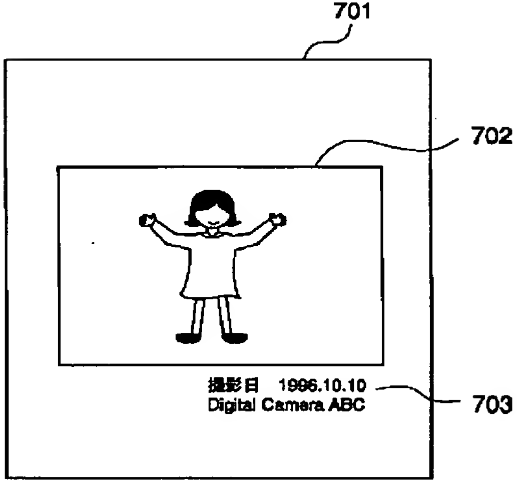
[Drawing 15]


F
S1318
画像選択ｽｲｯﾁ押下？
NO
D
YES
S1319
ﾌﾗｯｼｭﾒﾓﾘから次の画像ﾃﾞｰﾀを読み出して液晶表示部に表示
G

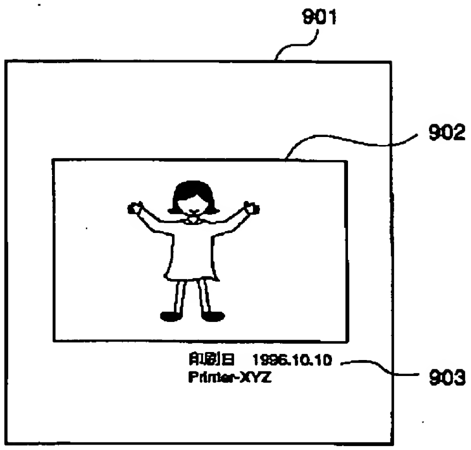
[Drawing 16]


スタート
S1601
赤外線受信？
NO
YES
S1602
NO
プリントデータ？
YES
S1603
プリントデータをRAMに格納
S1604
RAMからプリントデータをプリンタエンジン制御回路へ転送
S1605
NO
プリントデータ終了？
YES
S1606
文字コード情報受信？
NO
YES
S1607
ROMから対応するフォントデータを読み出し
S1608
上記フォントデータをプリンタエンジン制御回路へ転送
S1609
文字コード情報受信終了？
NO
YES
S1610
赤外線通信切断
エンド

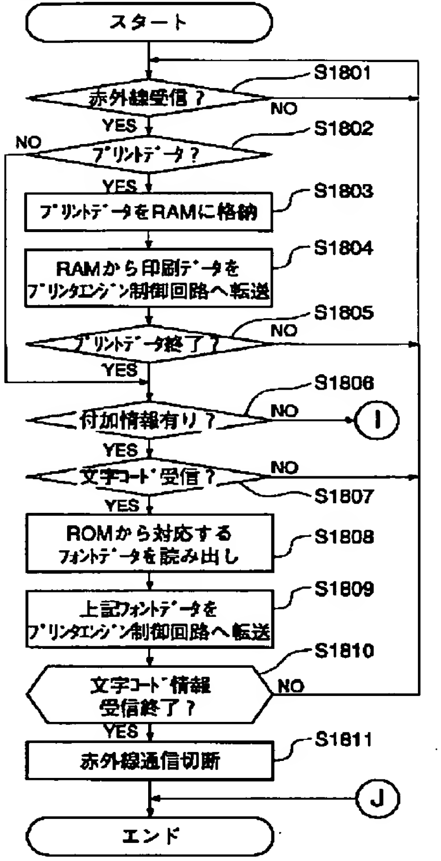
[Drawing 17]


701
702
撮影日 1996.10.10
Digital Camera ABC
703

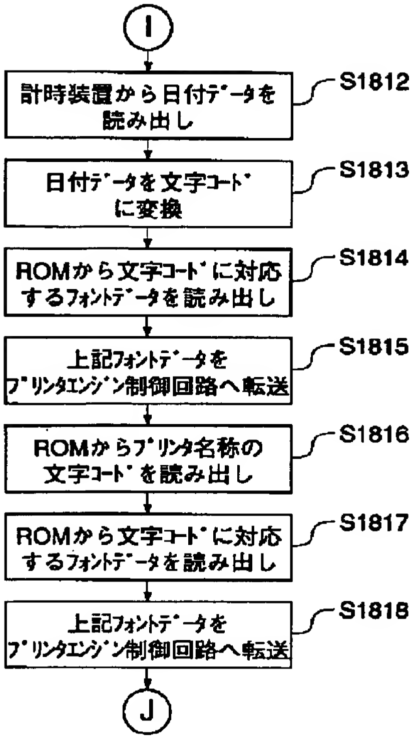
[Drawing 20]


901
902
印刷日 1996.10.10
Printer-XYZ
903

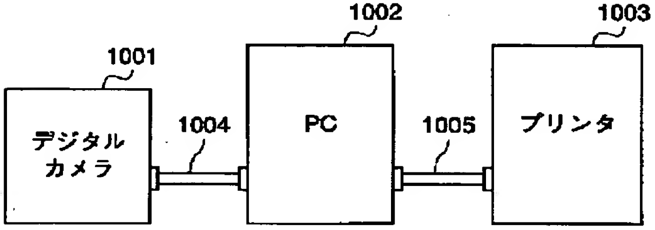
[Drawing 18]


スタート
S1801
赤外線受信？
NO
YES
S1802
NO
ﾌﾟﾘﾝﾄﾃﾞｰﾀ？
YES
S1803
ﾌﾟﾘﾝﾄﾃﾞｰﾀをRAMに格納
S1804
RAMから印刷ﾃﾞｰﾀを
ﾌﾟﾘﾝﾀｴﾝｼﾞﾝ制御回路へ転送
S1805
NO
ﾌﾟﾘﾝﾄﾃﾞｰﾀ終了？
YES
S1806
付加情報有り？
NO
I
YES
文字ｺｰﾄﾞ受信？
NO
S1807
YES
ROMから対応する
ﾌｫﾝﾄﾃﾞｰﾀを読み出し
S1808
上記ﾌｫﾝﾄﾃﾞｰﾀを
ﾌﾟﾘﾝﾀｴﾝｼﾞﾝ制御回路へ転送
S1809
S1810
文字ｺｰﾄﾞ情報
受信終了？
NO
YES
S1811
赤外線通信切断
J
エンド

[Drawing 19]


I
計時装置から日付ﾃﾞｰﾀを読み出し
S1812
日付ﾃﾞｰﾀを文字ｺｰﾄﾞに変換
S1813
ROMから文字ｺｰﾄﾞに対応するﾌｫﾝﾄﾃﾞｰﾀを読み出し
S1814
上記ﾌｫﾝﾄﾃﾞｰﾀをﾌﾟﾘﾝﾀｴﾝｼﾞﾝ制御回路へ転送
S1815
ROMからﾌﾟﾘﾝﾀ名称の文字ｺｰﾄﾞを読み出し
S1816
ROMから文字ｺｰﾄﾞに対応するﾌｫﾝﾄﾃﾞｰﾀを読み出し
S1817
上記ﾌｫﾝﾄﾃﾞｰﾀをﾌﾟﾘﾝﾀｴﾝｼﾞﾝ制御回路へ転送
S1818
J

[Drawing 21]


1001
デジタルカメラ
1004
1002
PC
1005
1003
プリンタ

[Translation done.]